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The Commonwealth of Massachusetts

ANNUAL REPORT  
OF THE  
METROPOLITAN DISTRICT  
WATER SUPPLY COMMISSION  
FOR THE  
YEAR ENDING JUNE 30, 1947

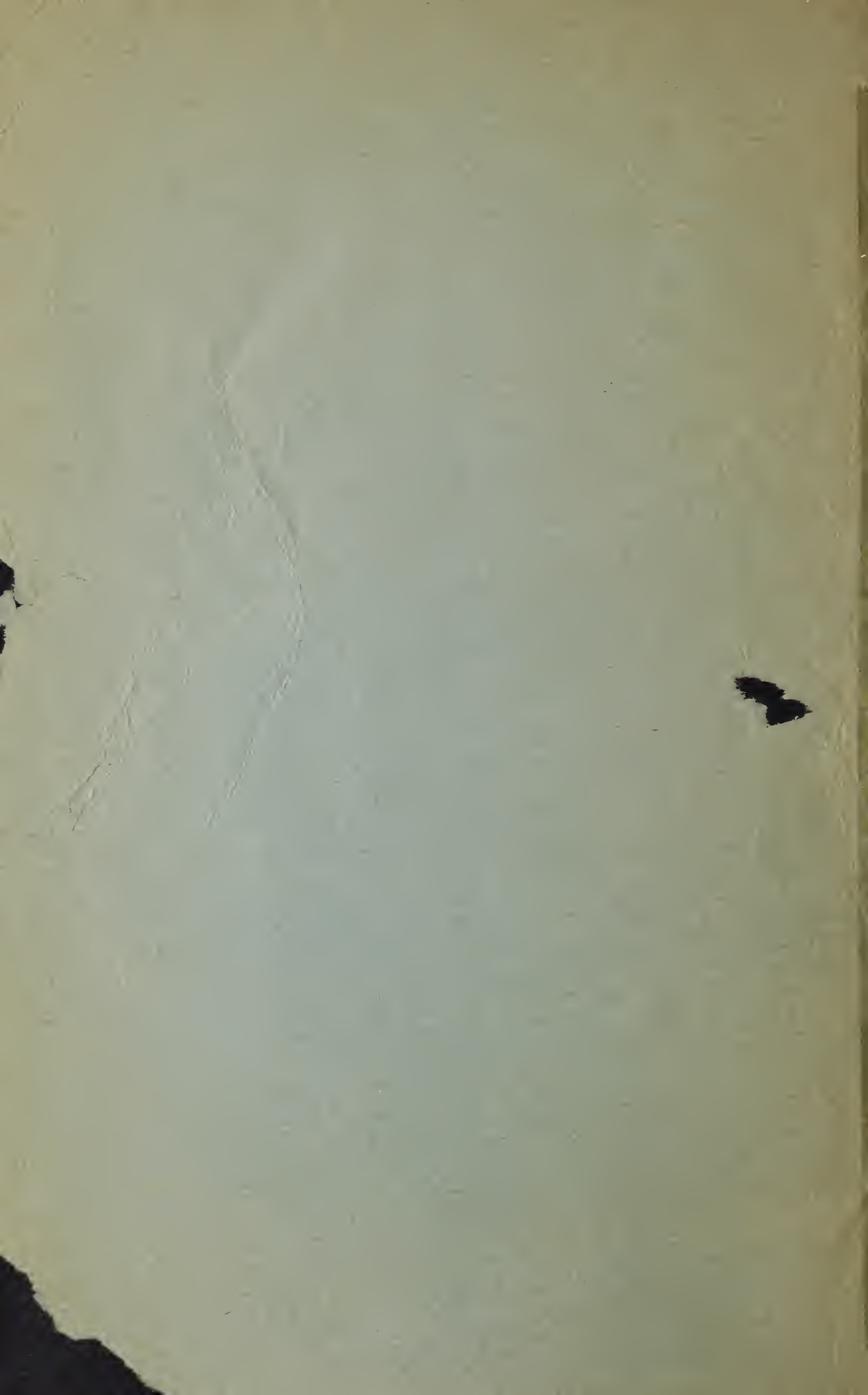
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# REPORT OF THE METROPOLITAN DISTRICT WATER SUPPLY COMMISSION

*To the Honorable the Senate and House of Representatives of the Commonwealth of Massachusetts in General Court assembled.*

The Metropolitan District Water Supply Commission, established under the provisions of Chapter 375 of the Acts of 1926, respectfully presents its

## TWENTY-SECOND AND FINAL ANNUAL REPORT

### I. ORGANIZATION AND ADMINISTRATION

By the provisions of Chapter 583 of the Acts of 1947, the Metropolitan District Water Supply Commission was abolished and its functions, duties, obligations and properties were transferred to the Metropolitan District Commission and provision was made for a Division of Construction to be established under the Metropolitan District Commission.

Until the cessation of its activities on June 30, William T. Morrissey continued as Chairman, Louis B. Connors as Associate Commissioner, and Edward J. Kelley as Associate Commissioner until he was succeeded on September 18 by John R. Shaughnessy. R. Nelson Molt continued as Secretary.

The Headquarters Office of the Commission was maintained at 20 Somerset Street, Boston, and Field Offices were maintained at Quabbin Reservoir; Riverside, Newton; and at Houghs Neck, Quincy, at the site of the Nut Island Sewage Disposal Plant.

The Commission continued the works providing for additional water supply and also sewer projects authorized by Chapter 705 of the Acts of 1945.

The Legislature authorized by Chapter 575 of the Acts of 1947 a further sum of \$4,000,000 for the construction of a pressure aqueduct system to supply water from Quabbin Reservoir to such cities and towns in and near the valley of the Chicopee River and its tributaries as may conclude agreements with the Metropolitan District Commission for the purchase of water. This act, together with Chapter 587 of the Acts of 1945, makes generally available to cities and towns within and without the Metropolitan Water District the waters impounded in Quabbin Reservoir.

### II. SWIFT RIVER SUPPLY

Quabbin Reservoir continued to discharge over the spillway notwithstanding a draft during the first six months of 1947 of 8,125,000 gallons.

The Commission continued its maintenance of fire lanes and access roads and fire equipment within the Swift River watershed, and made available for the full use of the public the roads over Winsor Dam, Quabbin Hill and the Dike, as well as the parking space and convenience stations and observation tower on Quabbin Hill.

Cooperation with the United States Geological Survey was continued by the Commission on the Ware, Chicopee and Connecticut rivers, and further studies and investigations relative to supplying water from Quabbin Reservoir to the City of Chicopee and other cities and towns in the Chicopee River Valley and its tributaries were continued.

At the outlet works at Winsor Dam other work was continued for the generation of electrical energy.



### III. WARE RIVER SUPPLY

The Commission publicly advertised for, received and opened bids on December 18, 1946, for installing the turbine, generator and valves for the generating plant at Shaft 1 of Quabbin Aqueduct, Oakham, Mass. Work has been in progress under this contract.

The Commission negotiated and executed on September 13, 1948, a contract with the New England Power Company for the sale and purchase of electrical energy to be developed at the Oakdale Station at Shaft 1.

The Holden-Rutland Sewer continued in operation and the Commission continued with plans and studies for disposing of sewage from Boylston and West Boylston within the Wachusett watershed area.

The Commission, at the request of the United States Army Engineers, permitted investigations to be made by them of the site of a proposed flood control dam; and its Chief Engineer conferred with the Army Engineers as to the details of the proposed flood control dam and reservoir, with special attention to the discharge of the waters so impounded.

### IV. HULTMAN AQUEDUCT

The water from Wachusett Reservoir was discharged through this aqueduct into the Weston Aqueduct supply mains and the intake at Marlborough, control works at Shaft 4, Norumbega Reservoir Gatehouse and an emergency chlorinating plant were maintained. Work was in progress by Gerke Moore Company under the provisions of Contract 133 for the construction of an inverted siphon on the Wachusett Aqueduct at the Assabet River Crossing in Northborough.

### V. CITY TUNNEL

The Commission publicly advertised for bids for the sinking of two shafts preliminary to the construction of the City Tunnel proper. These bids were opened October 30, 1946, and an award made to the lowest of six bidders, Marinucci Bros. & Co. of Dorchester, whose bid was \$522,528.25. Work was at once started under the provisions of the contract after its execution on November 25, 1946.

The progress of the work was at the rate of about 12.9 feet per week at Shaft 6, located in Newton near the Newton Cemetery, and 9.2 feet per week at Shaft 7, near Lawrence Basin off Commonwealth Avenue.

By June 30th, the excavation of both shafts was practically completed and work was in progress in the area which is to be used for future tunnel operations. These two shafts comprise the last major construction work to be completed before the excavation of the proposed City Tunnel proper, designs for which have been substantially completed.

In addition, the Commission has considered an investigation and study to be made of a site for a proposed reservoir in the Blue Hills and the location of a line to convey water to it.

### VI. FISCAL

The Commission hereto appends a copy of its expenditures for the fiscal year, and from the date of its appointment.

Metropolitan District Water Supply Commission

By WILLIAM T. MORRISSEY, *Chairman*

20 SOMERSET STREET, BOSTON, MASSACHUSETTS.

June 30, 1947.

## REPORT OF THE METROPOLITAN DISTRICT WATER SUPPLY COMMISSION AS ENLARGED BY CHAPTER 705 OF THE ACTS OF 1945

*To the Honorable the Senate and House of Representatives of the Commonwealth of Massachusetts in General Court assembled.*

The Metropolitan District Water Supply Commission, as enlarged by the provisions of Chapter 705 of the Acts of 1945, respectfully presents the

### SECOND AND FINAL ANNUAL REPORT

#### I. SEWERAGE PROJECTS

The Commission proceeded actively with the construction of the Sewage Treatment Plant at Nut Island, Houghs Neck in Quincy.

V. Barletta Company of Roslindale continued work under the provisions of Contract 136 for the excavation and filling at the site of the plant and proceeded to place the embankment therefor, completing the same in November. Riprap was also placed on the outer slopes and the off-shore drains were completed. By June 30th the provisions of the contract were substantially completed.

The Commission publicly advertised for proposals for the construction of a 12-inch sludge disposal line from Nut Island to President Roads which contained provisions for both surface and subaqueous work, and awarded the contract to the Bay State Dredging and Contracting Company of East Boston, the lowest bidder, whose proposal was \$575,724.06.

Upon the execution of the contract on November 4th, work was immediately started.

An award was made by the Commission to V. Barletta Company of Roslindale, Mass., for the construction of aeration and sedimentation tanks, influent and effluent conduits, grit chambers, etc., in the main building substructure at Nut Island, in the amount of \$1,179,763.20. The Commission publicly advertised for proposals on this contract and that of V. Barletta Company was the lowest one received.

Upon the execution of this contract, work was carried on in accordance with its provisions.

The Commission publicly opened and received proposals on June 10th for Contract 143, the provisions of which provided for the furnishing and delivering of mechanical equipment for the power plant, pumps, gates and valves for the Nut Island Plant. There were eleven items in the contract and the Commission awarded each of the eleven to the bidder submitting the lowest proposal therefor.

On April 26th, the Commission received bids for the construction of the concrete portion of the sludge digestion tanks for the Nut Island Plant and awarded the contract to the lowest bidder, Farina Brothers of Newton, Mass., whose proposal was \$394,758.50.

The Commission's Engineering Force continued studies for the construction of the four other sewerage projects authorized by Chapter 705 of the Acts of 1945, and especially that of the Alewife Brook Storm Overflow Conduit which the Commission directed the engineers give immediate consideration to for its design.

On June 30th, in accordance with the provisions of Chapter 583 of the Acts of 1947, the enlarged Metropolitan District Water Supply Commission turned over to the Metropolitan District Commission the work on these projects so far as completed.

## II. FISCAL

The Commission hereto appends a copy of its expenditures for the fiscal year, and from the date of its appointment.

Metropolitan District Water Supply Commission

By WILLIAM T. MORRISSEY, *Chairman*

20 SOMERSET STREET, BOSTON, MASSACHUSETTS.

June 30, 1947.



REPORT OF THE CHIEF ENGINEER

To the Metropolitan District Water Supply Commission.

GENTLEMEN:—The following is a report of the engineering department for the year ending June 30, 1947. On this date, the commission is abolished by law, and commencing July 1, its rights and duties are taken over by the Metropolitan District Commission, and its construction projects continued by a newly organized Construction Division of that Commission. Accordingly certain statistical data heretofore presented and published to cover the calendar years is not included in this report but the information covering the first six months of 1947 is turned over to the Water Division of the Metropolitan District Commission for subsequent inclusion in the report of that Commission for the entire calendar year 1947.

Miscellaneous work was continued on the Quabbin Reservoir access roads, fire lanes and fencing, and on seasonal clearing ahead of the water level, which on April 4 reached the flow line, Elev. 530. Work was continued on the installation of a waterwheel to generate electric power at Winsor Dam, and on the construction of the sewage treatment plant on the South Metropolitan system at Nut Island. Construction was commenced of the City Tunnel from Norumbega Reservoir to Chestnut Hill, and of the Assabet River siphon on the Wachusett Aqueduct. Designs were continued for the storm relief sewer in Alewife Brook, and studies underway for marginal relief conduits along the Charles River Basin from the North Metropolitan relief sewer extension, and for the proposed Blue Hill Reservoir.

ORGANIZATION

Stanley M. Dore, Assistant Chief Engineer, continued to act as deputy chief engineer.

Walton H. Sears, Mechanical Engineer, continued in charge of designs and specifications for plant and equipment.

Frederick W. Gow, Division Engineer, continued in charge of the Reservoir and Aqueduct Division, now to be superseded by the Field Office of the new Construction Division.

Lawrence M. Gentleman, Associate Civil Engineer, continued in charge of the detail work on design and contract and working drawings.

From time to time, the Commission employed the services of consulting engineers: Metcalf & Eddy of Boston, Greeley & Hansen of Chicago, James F. Sanborn of New York, and others.

The assignment of employees under the direction of the Chief Engineer at the end of the fiscal year and of the preceding year was as follows:

	June 30, 1946	June 30, 1947
Headquarters, Designing Division		
20 Somerset Street, Boston . . . . .	52	53
Reservoir and Aqueduct Division		
Administration Building at Winsor Dam, Belchertown . . . . .	24	23
Ware River Intake Building, Coldbrook . . . . .	11	11
City Tunnel Office, 107 Charles St., Auburndale . . . . .	67	82
	<hr/>	<hr/>
Total Engineering Force . . . . .	154	169

## HEADQUARTERS OFFICE

*Watershed Real Estate*—The total area of real estate acquired for Quabbin Reservoir to June 30 is 80,998 acres, of which 37 acres were acquired during the year in the Town of New Salem. Settlements have been secured covering 79,276 acres.

The total area of real estate acquired for sanitary protection in the Ware watershed to June 30 is the same as previously reported, 21,097 acres. Settlements have been secured covering 20,024 acres.

*Hultman Aqueduct and City Tunnel Real Estate*—During the year, no additional takings of real estate were made for the City Tunnel. Of a total of 563 acres of land taken in fee and easement for the purposes of the Hultman Aqueduct, including the City Tunnel, settlements have been secured covering 560 acres.

*Nut Island Sewage Treatment Plant Real Estate*—During the year 26 acres of real estate were acquired for the Nut Island Sewage Treatment plant in Quincy.

*Miscellaneous Real Estate*—During the year 2.15 acres of land were acquired for Wachusett Watershed Protection and .05 acres of land acquired for the building of the Assabet River Siphon on Wachusett Aqueduct.

*Water Diversion Damage Claims*—Only incidental work was done on data in connection with the suit brought by the Ludlow Manufacturing Associates. Their appeal to the Supreme Court for adjudication of exceptions in the case has resulted in the granting by the Court of a new trial. A suit brought by John Handzel of Bondsville has been settled.

*Record Drawings*—Work was continued on the record drawings of the Hultman Aqueduct.

*Hydrographic Data*—Gaging stations were continued in cooperation with the United States Geological Survey on the Ware River at Coldbrook, on the East Branch of the Swift River at the regulating dam, on the Chicopee River at Indian Orchard, and on the Connecticut River at Thompsonville, Connecticut. Level recorders were also maintained by the Commission on the Chicopee River at Red Bridge and on Beaver Brook south of Quabbin Dike.

Examination of the waters of the Ware, Swift and Chicopee Rivers included analyses of samples taken.

*Maintenance of Records*—Records of assignments of lots and interments in Quabbin Park Cemetery were maintained. Assistance was given to the Secretary's office in the apportioning of costs and the preparation of financial statements. Inventory records of tools and equipment in the Commission's offices and storehouses were kept up to date.

*Contracts and Specifications*

Plans and specifications were prepared for the following contracts for which bids were opened during the fiscal years:

*Contract 117*, for constructing Shafts 6 and 7 of the City Tunnel portion of the Hultman Aqueduct in the cities of Newton and Boston.

Six bids were received October 30, 1946, for constructing both shafts, ranging from \$522,528.55 to \$810,731.25. In addition, two bids were received for constructing Shaft 6 only, and one bid for constructing Shaft 7 only, the lower combination of which for constructing the two shafts was more than the low bid for both shafts. The contract was executed November 25, with Marinucci Bros. & Company, Dorchester, Mass., the lowest bidder.



*Contract 137*, for constructing aeration and sedimentation tanks, influent and effluent conduits and grit channels in the main building substructure of the Nut Island Sewage Treatment Plant in the City of Quincy.

Five bids were received July 31, 1946, ranging from \$1,179,763.20 to \$2,108,441.15. The contract was executed August 27, with V. Barletta Company, Roslindale, Mass., the lowest bidder.

*Contract 139*, for constructing a 12 inch sludge disposal line from Nut Island to President Roads and two outfall diffusers in the Town of Hull and the cities of Quincy and Boston.

Four bids were received October 16, 1946, ranging from \$575,724.06 to \$1,044,542.00. The contract was executed November 4, with the Bay State Dredging & Contracting Company, East Boston, Mass., the lowest bidder.

*Contract 143 (A, B, C, D, E, F, G, H, I, J, K)*, for furnishing and delivering mechanical equipment for the power plant, pumps, gates and valves for the Nut Island Sewage Treatment Plant in the City of Quincy. The advertisement for bids included also groups L and M, for four 60-inch flap gates and 24 small gate valves but no bids were received for these items. Bids were received June 10:

(A, B) Only one bid was received for one exhaust-heat-recovery boiler and silencer, for two 12-inch and two 6-inch engine-exhaust silencers, and for two 16-inch air-intake silencers and two 14-inch air-discharge silencers for blowers for the total sum of \$7,682.00. The contract was executed September 2, 1947, with the Maxim Silencer Company, Hartford, Connecticut, the only bidder.

(C, D) Only one bid was received for three 4,000-cfm and two 800-cfm air cleaners and silencers and two electrostatic precipitator-type air filters for the total sum of \$5,342.00. The contract was executed September 15, 1947, with the American Air Filter Company, Inc., Louisville, Kentucky, the only bidder.

(E, I) Only one bid was received for Group E for two sludge heat exchangers for \$14,782.00; and two bids for Group I for seven triplex plunger sludge pumps, for \$36,501.00 and \$37,776.00. The contract was executed September 8, 1947, with the Pacific Flush Tank Company, Chicago, Illinois, the only bidder for Group E, and the lower bidder for Group I.

(F) Only one bid was received for three heat exchangers for \$2,827.00. The contract was executed September 9, 1947, with the Ross Heater Manufacturing Company, Inc., Buffalo, New York, the only bidder.

(G, H) Six bids were received for Group G for 23 centrifugal pumps, ranging from \$13,883.99 to \$17,469.00; and one bid for Group H for six screw-feed centrifugal pumps for \$12,033.00. The contract was executed August 28, 1947, with the Chicago Pump Company, Chicago, Illinois, the lowest bidder for Group G, and the only bidder for Group H.

(J) Two bids were received for 24 sluice gates for \$59,620.00 and \$154,451.00. The contract was executed September 2, 1947, with the Chapman Valve Manufacturing Company, Indian Orchard, Mass., the lower bidder.

(K) Three bids were received for 8 dewatering and drainage pumps, ranging from \$4,879.00 to \$6,625.00. The contract was executed August 28, 1947, with the Hayes Pump and Machinery Company, Boston, Mass., the lowest bidder.

These were executed by the Metropolitan District Commission, all subsequent to June 30.

*Contract 146*, for constructing the concrete portion of four 110-foot diameter sludge-digestion tanks for the Nut Island Sewage Treatment Plant in the City of Quincy.

Sixteen bids were received April 29, ranging from \$394,758.50 to \$596,354.50. The contract was executed May 26, with Farina Bros., Newton, Mass., the lowest bidder.

*Contract 151*, for the sale and purchase of electric energy to be developed at the Oakdale Station at Shaft 1 of Quabbin Aqueduct in the Town of West Boylston. This contract, executed September 13, 1946, was negotiated with the New England Power Company. Its principal provision is for the sale of electricity at 66,000 volts for 6.25 mills per kwh. from 7:00 A.M. to 11:00 P.M., Monday to Friday, inclusive, generally during the period from July 1 to February 28.

*Contract 152 (A, B, C, D, E, F, G)*, for furnishing and delivering a waterwheel, generator, switchgear, transformer, substation and appurtenances and a penstock valve in the Town of West Boylston. Bids were received December 18, 1946:

(A) Three bids were received for the 5,000-h.p. single runner, vertical hydraulic turbine, ranging from \$98,500.00 to \$185,000.00. The equipment was purchased February 6, from the S. Morgan Smith Company, York, Pennsylvania, the lowest bidder, the price being subject to an escalator-clause increase by not more than 30%.

(B, C, D, F) Three bids were received for Groups B, C and F for the 4375-Kva., 6900-volt generator, for the switchgear, storage batteries and charging equipment, ranging from \$100,662.00 to \$109,371.00; and four bids for Group D for a 4375-Kva., 66,000 to 6900-volt transformer, ranging from \$14,407.00 to \$19,210.00. The contract was executed February 13, with the General Electric Company the lowest bidder, the price being subject to an escalator-clause increase by not more than 30%.

(E) Four bids were received for the switchgear and appurtenances, ranging from \$8,154.95 to \$8,975.00. The contract was executed March 10, with the Southern States Equipment Corporation, Hampton, Georgia, the lowest bidder, the price being subject to an escalator-clause increase by not more than 20%.

(G) Two bids were received for one 84-inch motor-operated penstock disc valve, for \$22,500.00 and \$31,850.00. However, the lower bidder offered a valve which did not meet the specifications either as to material or dimensions. The contract was executed February 13, with Chapman Valve Manufacturing Company, Indian Orchard, Mass., the only bidder to meet the specifications.

### *Design of Water Supply Projects*

Studies and designs were continued of structures proposed to be constructed but not yet bid, as follows:

*Wachusett Watershed Protection*—Studies were continued in cooperation with the Quabbin Reservoir and Aqueduct Division of a system for diverting from the watershed of Wachusett Reservoir the sewage of Boylston and West Boylston.

*Hultman Aqueduct—City Tunnel*—Studies were continued of plans for the proposed future extension of the City Tunnel.

*Distributing Reservoirs*—Studies and designs were continued for the modification of, and new connections to, existing distributing reservoirs, which must follow the completion of the City Tunnel; and also for an additional distributing reservoir in the Blue Hills Reservation.

*Barre Falls Flood Control Project*—The Chief Engineer of the Commission continued as a member of an advisory board to assist the State Planning Board in its studies and recommendations to His Excellency the Governor on the Federal Government's Barre Falls flood control project and other similar Massachusetts projects.



*Chicopee Valley Water Supply*—Studies were continued of the possibility of supplying communities in the Chicopee River Valley with water from Quabbin Reservoir. :

### *Design of Sewerage Projects*

Actual construction was confined to Project No. 1, for the Nut Island Sewage Treatment Plant. Studies were continued on the other four sewerage projects authorized in Chapter 705 of the Acts of 1945, for the improvement of the Metropolitan Sewerage Systems.

*Sewage Records*—The collection of twenty-four-hour composite samples from the South Metropolitan sewer at about 8-day intervals for analysis of the amount of suspended solids was continued. The collection of samples at about 8-day intervals was commenced from various points along Alewife Brook for analysis of the amount of suspended solids and other pertinent data.

*Project 2—Extension of North Metropolitan Relief Sewer*—Studies were commenced of the requirements of an extension to the Deer Island pumping station, and its relation to a future sewage treatment plant at that point and to a relief connection from the South Metropolitan sewer.

*Project 3—Alewife Brook Storm Overflow Conduit*—Progress was made on the designs for the proposed conduit which will intercept objectionable overflows, and for a new pumping station.

*Projects 4 and 5—Charles River Basin Storm Overflow Conduits*—Investigations were continued of conditions along both sides of the Charles River.

The recording of levels at the Fens Gatehouse of the Boston Marginal Conduit and at the Charles River Dam gatehouse of the Cambridge Marginal Conduit was continued. Studies were continued of the clogging of racks and gates in the Boston Marginal Conduit by debris from the unprotected openings into the Stony Brook Conduit of the City of Boston.

### RESERVOIR AND AQUEDUCT DIVISION

The Quabbin Reservoir and Aqueduct Division continued in charge of all field work. In addition to supervision of construction work this consisted of: Topographic and real estate surveys in the watersheds, along the aqueducts, at the site of the proposed distributing reservoir in the Blue Hills, along the proposed City Tunnel and the proposed Alewife Brook Conduit and in connection with the other sewerage projects; reforestation; reservoir reclearing and work on fire lanes and access roads; the work of the water analysis laboratory; investigations in the Chicopee River Valley; the collection of data on flow in the South Metropolitan Trunk Sewer and the collection and analysis of sewage samples there and along Alewife Brook; and the maintenance and operation of Quabbin Park Cemetery, the Quabbin Reservoir release works at Winsor Dam, the Ware River Intake works at Coldbrook, Quabbin Aqueduct and Hultman Aqueduct and the Rutland-Holden trunk sewer.

Daily rainfall and temperature records and continuous records of the flow of the Ware River were kept at the Intake Building at Barre, and daily rainfall records at Pelham, at Nichewaug and Harvard Forest in Petersham, at South New Salem, at North New Salem, at West Rutland and at the Quabbin Aqueduct Intake in Hardwick. Daily rainfall and temperature records were kept at the Administration Building at Belcher-town. Continuous records were kept of the flow of the Swift River at Winsor Dam. Work was continued in the field offices on record plans in the Reservoir Area and along the Hultman Aqueduct.



The Department of Public Health continued its cooperation in the analysis of samples of water.

Quabbin Hill Building and the scenic highway between Winsor Dam and Quabbin Dike and the Quabbin Hill Observation Tower were closed for the winter season Nov. 14, 1946 and reopened to the public April 18.

The Belchertown office continued its records and management of the affairs of the former towns of Dana, Enfield, Greenwich and Prescott. Policing of the Quabbin Reservoir area was continued by the Metropolitan Police who were housed in the Administration Building. The work of constructing the second new residence for engineering personnel on Blue Meadow Road was continued with lumber and other materials salvaged from various buildings in the reservoir area.

Plans and studies were continued by the Coldbrook office of methods for disposing sewage in the towns of Boylston and West Boylston in the Wachusett watershed. Surveys were made to locate a power line connection from Shaft 1 of Quabbin Aqueduct to the substation of the New England Power Co., in West Boylston. Monthly inspections and reports were continued of conditions found at all shaft heads along the Quabbin Aqueduct. The chlorinating station on Mill Brook below the Central New England Sanatorium was maintained.

The Newton Office made additional surveys of the location of a pipe line connection to the proposed distributing reservoir in the Blue Hills area. Sewage level gages were continued on the South Metropolitan Sewer at the Fens Gatehouse of the Boston Marginal Conduit, and at the Charles River Dam chamber of the Cambridge Marginal Conduit.

Inspections were continued of conditions along the Stony Brook Conduit permitting the entrance of debris into the conduit. Extensive surveys were continued in the valley of Alewife Brook to determine the location of existing sewers and connections and other underground structures, and the extent and character of contributions from sewage and storm water from various sources.

*Reforestation*—No watershed planting was done during the year since, as previously reported, the available trees are now too large for economical use, with the exception of a small number of spruce not yet ready for transplanting.

300 red pine 7-year transplants were taken to the Coldbrook Office and used for miscellaneous replacement. 11,000 red and white pine 7-year and 8-year transplants were taken to the Newton Office and planted along the Hultman Aqueduct right-of-way. Also about 1,150 transplants were sold to individuals.

Work on white pine blister rust control in cooperation with the U. S. Department of Agriculture was continued until September 27, 1946, and resumed on April 14.

*Floating Equipment*—The use of the Commission's two largest boats, the "Enfield" and the "Greenwich," was continued for the transportation of workmen and their equipment to various sections of the reservoir for taking water samples and general utility work. The "Dana" remained in storage. The New England Power Company was permitted to house and use a boat to facilitate the maintenance of its 110,000-volt transmission line crossing the reservoir.

*Fire Protection*—Fire fighting equipment was maintained and ready for service at all times, one fire truck being stationed at Pelham Hill on the west side of the reservoir, one at Nichewaug near the reservoir intake to Quabbin Aqueduct, one near the Ware River Intake Works, and the remainder of the fire fighting equipment at the Administration Buildings. Additional equipment consisting of two trailer crash pumping units were purchased from the War Assets Administration. During the

year the equipment and personnel responded to calls for assistance at nine forest fires in the Quabbin area. Work on fire access roads was continued by force account.

*Quabbin Park Cemetery*—A small labor force averaging 5 men was employed on cemetery work throughout the year. The vault was maintained ready for use, cemetery lots graded and seeded as required, the entire cemetery area properly maintained and driveways plowed and kept clear of snow throughout the winter months. Fourteen interments were made during the year. The Commission decided in January that complete removals should be made from Lincoln Cemetery, Petersham, to Quabbin Park Cemetery. Arrangements were in progress but no bodies were removed during the year.

#### *Rutland-Holden Sewer*

The Rutland-Holden Sewer was in continuous operation throughout the year. The entire length of the line and the meter stations at the Rutland State Sanatorium, at the United States Veterans' Hospital in Rutland, at the Rutland-Holden boundary line and at the Holden-Worcester boundary line were inspected regularly.

#### *Laboratories*

*Park Road Laboratory—Weston*—The Commission's laboratory for soil testing was continued with equipment previously moved from Belchertown to Weston. In the same building the analyzing of sewage samples was continued. This included the periodic testing throughout the year of composite 24-hour samples from the South Metropolitan Sewer at Nut Island, also the periodic testing of samples from Alewife Brook and from the Stony Brook Conduit.

The concrete laboratory was operated in connection with work under Contracts 117, 137, 139 and 146, testing aggregate for concrete and making compression tests on concrete specimens.

*Water Analysis Laboratory—Belchertown*—The taking and analyzing of samples from the Ware, Swift, Quaboag and Chicopee rivers was continued. The chemical and bacteriological analysis of the regularly scheduled samples from Quabbin Reservoir and tributary streams in the Swift and Ware watersheds was continued. The work has been under the general supervision of Clarence H. Reed, Assistant Sanitary Engineer of the Sudbury Section of the Water Division, Metropolitan District Commission.

#### *Operation of Winsor Dam Outlet Works*

The outlet works were maintained for practically the entire year. The required release of water was controlled over the main dam spillway. Repair of the cavitation in the 48" valve was completed in August and September 1946, with the construction in place of a new babbitt seat. Pending the completion of the waterwheel installation, the heating of the building was continued by the use of the hot air furnace previously transferred from the Quabbin Park Cemetery building. Both penstock lines from the intake to the outlet works, the 48-inch line embedded in the invert of the stream control tunnel and the 68-inch line laid on the fill inside the tunnel, were drained and inspected and found to be in good condition. The lining of the side walls and arch of the tunnel itself above the fill was also inspected on March 21, and found to be in good condition. One small area of the lining was patched with cement mortar.



### *Operation of Quabbin Aqueduct*

The Reservoir intake works at Shaft 12 of Quabbin Aqueduct, the Ware River intake works at Shaft 8, and the outlet works at Shafts 1 and 11A were kept ready for operation with the fine racks in place at Shafts 12 and 8, and with an auxiliary rack on the invert at the bottom of the tunnel at Shaft 9.

The Quabbin Aqueduct tunnel was entered and inspected between Shaft 12 and Shaft 8 on October 8, 1946, and between Shaft 8 and Shaft 4 on October 15. The tunnel lining was found to be in very good condition.

### *Operation of Hultman Aqueduct*

The discharge of water directly from Wachusett Reservoir through the new Hultman Pressure Aqueduct and through the 7-foot diameter by-pass into the Weston Aqueduct supply mains was continued throughout the year. The Hultman Aqueduct intake works in Marlboro, the control works at Shaft 4 below the Sudbury Dam, and the Norumbega Reservoir gatehouse and emergency chlorinating plant were maintained with the fine racks in place at the intake, and fine screens in the Norumbega gatehouse.

### *Progress of Construction Contracts*

*Contract 117*—Contract 117, for the construction of Shafts 6 and 7 of the City Tunnel was started during the first week of December, 1946, with clearing and the grading of access roads to the sites. An existing wood road into the Newton Cemetery property on Commonwealth Avenue was regraded and used for access during most of the year until the spoil area could be brought to the grade of the permanent easement. At Shaft 7, the existing access road from Chestnut Hill Drive was used throughout the year being graded and maintained with shaft spoil. The Contractor started erecting his plant buildings at both shafts about the middle of December. Powder magazines were erected at both shafts in compliance with the rules of the Department of Public Safety. Electric power was used and purchased from the Boston Edison Company. The total consumption to June 30, was 130,000 K.W.H. at Shaft 6, and 115,470 K.W.H. at Shaft 7.

At Shaft 6, the sanitary provisions included a 1,000 gallon septic tank completed January 9. At Shaft 7, connection was made to the sewer of the City of Boston in Beacon Street. This connection involved about 900 feet of 8-inch sewer pipe, and was completed in December. Water pumped from Shaft 6 was discharged into a settling basin in the spoil area, and from Shaft 7 into the unused Lawrence Basin of Chestnut Hill Reservoir. The Contractor was allowed to lower the Lawrence Basin level from Elev. 134.5 to Elev. 127.9 during the latter part of February, after which it rose gradually to 130.4 at the end of the year. The excavation at both shafts was practically dry and only 264 million foot-gallons were pumped during the year at Shaft 6, and 230 at Shaft 7. To isolate the shaft sites for operations under this contract and the proposed main tunnel contract, 886 feet of chain link fence was erected along Commonwealth Avenue at Shaft 6, and 724 feet at the intersection of Chestnut Hill Drive and Chestnut Hill Driveway at Shaft 7.

Earth excavation at both shafts was done in open-cut using a power shovel or back-hoe, as conditions warranted. At Shaft 6, the average depth of overburden was 24 feet, from average surface Elev. 140.9 to average ledge Elev. 116.9. Muck was removed by bucket and crane until the excavation had reached Elev. -45.0., when the operations were halted for the erection of a steel headframe and stationary hoist. At Shaft 7, the overburden was less than 8 feet deep from average surface Elev. 140.4



to average ledge Elev. 132.7, and the headframe and hoist were installed after the muck had been excavated by bucket and crane to Elev. 21.0. At Shaft 7, an air-operated mucking machine operated from two rails spanning the shaft just above the muck pile was installed after the excavation had reached Elev. 12.0. At Shaft 6, the earth was supported by timbering until the concrete lining was placed. No support was required in the rock. At Shaft 6, the west tunnel heading was started May 15; and the east heading, May 16. The muck was loaded by hand into buckets on flat cars until January 9, when an electrically operated dragline-type mucking machine was installed. Steel forms were used for lining the shafts with concrete, which was delivered to the sites by transit mixers and lowered and placed from 1 cubic yard and ½ cubic yard buckets.

The following tabulation gives the details of the progress of the shafts and tunnel in rock.

	Shaft 6	Shaft 7
Rock Excavation .....	from Elev. 116.9, Jan. 3 to Elev. -154, May 14	from Elev. 132.7, Jan. 10 to Elev. -85, June 30
Concrete Lining .....	from Elev. 138, Jan. 16 to Elev. -134, May 5	from Elev. 139.0, Feb. 28 to Elev. -83.4, June 27
Average Progress		
Sinking and Lining .....	14 feet per week	9 feet per week
Average Use of Dynamite .....	4.8 lbs. per cu. yd.	2.3 lbs. per cu. yd.
	East Heading, Shaft 6	West Heading, Shaft 6
Tunnel Excavation .....	161.1 feet, May 16 to June 30	68.1 feet, May 15 to June 10
Average Progress .....	25. feet per week	19 feet per week
Average Use of Dynamite .....	6.7 lbs. per cu. yd.	6.2 lbs. per cu. yd.

At the end of the year, June 30, the excavation of Shaft 7 lacked about 19 feet of completion and none of the tunnel headings at Shaft 6 had reached the limiting distance from the shaft of 200 feet specified in the contract.

The value of work included in contract estimates to July 1, the date of the latest estimate, was \$333,355.64, of which 90 per cent has been approved for payment. The Contractor worked three 8-hour shifts daily except Sunday, and his force average 40 men, the maximum being 106 for the week ending April 12.

The principal items of equipment used were:

- 1 100 H.P. Motor-Driven 7-ton Mining Hoist at each shaft.
- 1 Air Motor-driven shaft Mucking Machine at Shaft 7 with 9 cubic foot bucket.
- 1 Dragline Type 2500 H.P. Motor-operated Mucking Machine.
- 1 Motor-driven 1700 cfm Air Compressor at Shaft 7.
- 1 Smaller Air Compressor at Shaft 6.
- 1 Electric Welder.
- Drills, trucks, etc.

*Contract 133*—Contract 133, for constructing an inverted pipe siphon on Wachusett Aqueduct at the Assabet River Crossing in Northborough was started in March with the delivery of several loads of timber at the site, orders having been placed for the fabrication of the steel pipe in the middle of September. Commencing June 16, the New England Power Company relocated the nearby high tension line, and on June 18 the Contractor started erecting plant buildings. No estimate for payment was made. The Contractor's force averaged six men.

*Contract 136*—Contract 136, for excavation and filling at the site of the Nut Island Sewage Treatment Plant in Quincy was continued throughout the year. The placing of embankment was completed late in November. The placing of riprap along the outer slope, and the marine ramp was continued and was substantially complete October 7. An agreement was made under which the removal of the old pier will be omitted, and completed under Contract 139. The laying of the 60-inch precast reinforced

concrete offshore drain was completed July 13, but the Contractor was permitted to postpone the construction of the headwall and tide gate installation in order to use the cofferdammed area at the outlet end as a pump sump for work under Contract 137. With these exceptions, the work was substantially complete at the end of the year.

The value of work included in contract estimates to December 1, 1946, the date of the latest estimate, was \$454,294.71, of which 90 per cent has been approved for payment. The Contractor's force averaged 5 men.

*Contract 137*—Contract 137, for constructing the aeration and sedimentation tanks, influent and effluent conduits, grit channels and main building substructure of the Nut Island Sewage Treatment Plant in Quincy was started August 28, with the excavation by bulldozer and dragline at the tank sites. Plant buildings erected under Contract 136 were continued in use for this contract. The excavation for the tanks was completed early in December, and screened gravel placed over areas and rolled. Concrete was brought to the site in transit mixers. Construction of floor slabs for the tanks was begun November 6, and the tanks including side, intermediate and connecting walls was about 59 per cent complete at the end of the year, with 5925 cubic yards of concrete in place. Commencing October 25, 570 feet of 18-inch concrete drain pipe was laid beneath the tanks. This item was about 65 per cent complete at the end of the year. Work on the influent and effluent conduits was begun early in March, and was 11 per cent complete at the end of the year with 465 cubic yards of concrete in place. Commencing January 17, sheet steel piling was driven at the influent ends of the sedimentation tanks along the toe of the existing trunk sewer embankment. Excavation for the main building was begun early in June on the construction of a temporary storage warehouse for metal work and equipment which will be delivered to the site under other contracts and transported and cared for under this contract. The entire work was about 38 per cent complete at the end of the year.

The value of work included in contract estimates to July 1, the date of the latest estimate, was \$452,230.19, of which 90 per cent has been approved for payment. The Contractor's force average 25 men.

The principal items of equipment used were:

- 2 Diesel operated cranes with 80-foot booms.
- 1 Truck crane with 70-foot boom.
- 1 Gas-operated shovel, 1½ cu. yd. capacity.
- 2 Bulldozers.
- 1 Gas-operated roller.

Pumps, trucks, woodworking equipment, etc.

*Contract 139*—Contract 139, for constructing the 12-inch sludge disposal line from Nut Island to President Roads, and the outfall diffusers, was started April 18, when an instrument platform was constructed at the end of the first leg of the sludge line in the harbor off Long Island. The land portion of the work on Long Island is being done by Coleman Brothers, subcontractors. Commencing May 14, they had completed during the year 3484 feet of trench excavation with a dragline crane; and commencing May 21, 3328 feet of 12-inch mechanical joint pipe in 16-foot lengths. Dredging the trench for the subaqueous portion of the line was started May 12, and at the end of the year 8470 feet of trench were excavated by a steam dredger with a five cubic yard clam shell bucket. The 12-inch Victaulic joint pipe in 12-foot lengths was assembled on the deck of a lighter. Six lengths of pipe were jointed, attached to a strong-back, lowered over the side and joined to the pipe in place with a Victaulic coupling by divers. The first pipe was placed June 17, and at the close of the year 2034 feet have been placed.

Work was also started on the precast domes of the diffusers and their appurtenances to be placed over the existing outlets. This work was done in Roxbury with transit-mixed concrete.



The value of work included in contract estimates to July 1, the date of the latest estimate, was \$183,836.62, of which 90 per cent has been approved for payment. The Contractor's force average 42 men.

The principal items of equipment used were:

- 1 Crane with 70-foot boom, 2 cubic yard bucket.
  - 1 Bulldozer.
  - 2 Steam Dredgers.
  - 3 Tug Boats.
  - 3 Mud Scows.
- Trucks, small boats, tenders, compressors, hose, etc.

*Contract 146*—Contract 146, for construction of the concrete portion of the sludge digestion tanks for the Nut Island Sewage Treatment Plant in Quincy, was started June 4. Excavation for one of the four tanks was begun June 14, and the placing of reinforcing steel in floor and side forms started June 24. No estimate for payment was made. The Contractor's force averaged 11 men.

*Contract 147*—Contract 147, for surfacing Sea Avenue and Island Avenue in Quincy, as permanent access road to the Nut Island Sewage Treatment Plant, was continued to completion September 7. The final estimate dated November 12, 1946, was for \$16,456.67. The Contractor's force averaged 3 men.

*Contract 150*—Contract 150, for installing the hydro-electric equipment in the Winsor Dam Outlet Works was continued throughout the year. The installation of the waterwheel, with draft tube, scroll case, relief valve and other appurtenances, was started July 15, 1946, and the placement of concrete September 5. This portion of the work was practically complete at the end of the year. The installation of the generator was delayed by an unfortunate accident in transit. It was delivered in a damaged condition and the rotor was removed and shipped to the nearest convenient machine shop in Holyoke on November 14, 1946, where tests showed that the shaft was sprung out of line. The guide bearings were also found to be out of shape. The above materials were returned to the factory, a new shaft installed, new bearings furnished and delivery made on April 21; but four field coils were damaged in this second shipment involving still further delay, and their replacement at the outlet works by the manufacturer. Reassembly was completed on June 20, and the work of installation was in progress at the end of the year. The work of setting the switchgear in place and erecting the outdoor substation was continued and practically completed. Work on the erection of the 22,000-volt transmission line was continued to completion, and the installation, conduit wiring and appurtenances between the generator and the outdoor station was about 90 per cent at the end of the year.

The value of work included in contract estimates to June 15, the date of the latest estimate, was \$32,142.90, of which 90 per cent has been approved for payment, this being in addition to payments made to the manufacturers under Contracts 149 A-F. The Contractor's force averaged 3 men.

### *Storage and Flow Records*

*Quabbin Reservoir Storage and Release*—Storage in Quabbin Reservoir continued. The following is a continuation of the information tabulated in previous reports. The figures for total storage show the quantity above the sill of the lower intake in Quabbin Aqueduct, Elev. 528.00. Below this sill and hence not available for draft to Wachusett Reservoir, there are about 10,000 million gallons above the reservoir bottom. The water level continued to rise from the previously reported Elev. 528.58 on December 31, 1946, to;



High Point on January 27 . . . . .	528.93
Low Point on February 12 . . . . .	528.41
High Point on May 8 . . . . .	530.56
Low Point on May 22 . . . . .	530.38
High Point on May 27 . . . . .	530.54
AT THE END OF THE PREVIOUS FISCAL YEAR JUNE 30, 1946:	
Elevation of Main Reservoir . . . . .	529.36
Total Storage . . . . .	411,600 M.G.
AT THE END OF THE FISCAL YEAR JUNE 30, 1947:	
Elevation of Main Reservoir . . . . .	530.24
DRAWN TO WACHUSETT RESERVOIR IN THE FIRST SIX MONTHS OF 1947:	8,125 M.G.
From . . . . .	Jan. 27
To . . . . .	Feb. 11
RELEASED IN THE FIRST SIX MONTHS OF 1947 OVER SPILLWAY AND THROUGH CON-	
TROL WORKS IN EXCESS OF LEGAL REQUIREMENTS:	
January . . . . .	547 M.G.
February . . . . .	225 " "
March . . . . .	961 " "
April . . . . .	6,257 " "
May . . . . .	8,688 " "
June . . . . .	4,814 " "

*Ware River Diversion*—No Ware River water was diverted into Quabbin Aqueduct during the 12 months ending June 30. The following is a continuation, for the first six months in 1947, of the information published in previous reports:

Released in 1947, during the diversion period prior to June 15, in excess of legal requirements:

January . . . . .	915 M.G.
February . . . . .	2,350 " "
March . . . . .	4,024 " "
April . . . . .	4,435 " "
May . . . . .	2,532 " "
June . . . . .	222 " "

*Delivery from Hultman Aqueduct to Disribution System*—Pending the extension of Hultman Aqueduct to Chestnut Hill by way of the proposed City Tunnel the limited use of the aqueduct has been continued. The number of gallons delivered to the distribution system monthly during the first six months of 1947 was as follows:

January . . . . .	2,202,590,000 Gals.
February . . . . .	1,926,640,000 "
March . . . . .	2,049,510,000 "
April . . . . .	1,959,140,000 "
May . . . . .	2,004,130,000 "
June . . . . .	2,000,090,000 "

LIST OF DRAWINGS AND TABLES APPENDED HERETO

- Status of Contracts completed during the fiscal year ending June 30, 1947
- Status of Contracts in force on June 30, 1947
- Canvass of Bids, Contract 117
- Canvass of Bids, Contract 139
- Canvass of Bids, Contract 146

Respectfully submitted,  
  
KARL R. KENNISON,  
*Chief Engineer.*

## STATUS OF CONTRACTS COMPLETED BETWEEN JUNE 30, 1946 TO JUNE 30, 1947

Contract No.	Description	Contractor.	No. of Bids *	Contract Executed	Basis of Award	Final Estimate	Date of Final Estimate
147	Bituminous surface, Sea & Island Ave., Quincy	V. Barletta Co.	2	6/27/46	\$15,288.81	\$16,456.67	11/12/46

## STATUS OF CONSTRUCTION CONTRACTS IN FORCE ON JUNE 30, 1947

Contract No.	Description	Contractor	No. of Bids*	Contract Executed	Basis of Award	Payments To Date
117	Construction of Shafts 6 and 7 City Tunnel, Boston and Newton	Marinucci Bros. & Co.	9	11/26/46	\$522,528.55	\$300,020.08
133	Inverted Pipe Sludge, Northborough	Berke-Moore Co., Inc.	6	8/28/46	197,758.00	None
136	Fill at Nut Island	V. Barletta Co.	8	10/18/45	478,814.36	408,865.25
137	Tanks & Foundation at Nut Island	V. Barletta Co.	5	8/27/46	1,179,763.20	319,801.48
139	Digested Sludge Line at Nut Island	Bay State Dredging & Contracting Co.	4	11/4/46	575,724.06	165,452.96
141 A & B	Engine, Generators, Blowers and Pumps at Nut Island	Worthington Pump & Machinery Company	5	5/31/46	330,374.00	None
142 A to H	Grit and Sludge Removal Equipment and Screens at Nut Island	Jeffrey Mfg. Co.	13	3/26/46	137,927.00	None
142 I	Comminutors	Chicago Pump Co.	1	3/19/46	40,244.00	None
144 A	Traveling Crane at Nut Island	Robert Abel, Inc.	1	9/17/46	4,665.00	None
144 B	Traveling Cranes, Chain Hoist, etc.	Robert Abel, Inc.	1	9/17/46	8,513.35	4,613.71
144 C	Diffuser Tube Aeration System	Chicago Pump Co.	1	9/16/46	33,954.00	None
144 D	Venturi Meters	Builders-Providence, Inc.	1	9/17/46	10,831.00	None
144 E	Two Covers for Secondary Digestion Tanks	Pacific Flush Tank Co.	1	10/3/46	51,974.00	None
144 F	Supernatant Selectors	Pacific Flush Tank Co.	1	10/3/46	3,114.00	None
144 G	Chlorinating Equipment	Wallace & Tiernan Co., Inc.	2	9/23/46	48,927.00	None
146	Four Digestion Tanks at Nut Island	Farina Bros.	16	5/16/47	394,758.50	None
149 A	Hydraulic Turbine at Winsor Dam Generator	S. Morgan Smith Co.	2	6/25/45	27,953.00	\$22,641.93
149 B		Electric Machinery Mfg. Company	3	7/16/45	17,192.00	None
149 C, E, F	Substation, Switchgear and Storage Battery	General Electric Co.	2	6/5/45	15,008.00	12,025.98
149 D	Transformer	Erie Electric Co.	3	6/5/45	4,299.00	3,095.28
150	Installing Power Plant at Winsor Dam	Berke-Moore Co., Inc.	2	3/27/46	39,198.10	28,928.61
152 A	5,000 H.P. Turbine for Oakdale Station	S. Morgan Smith	3	2/6/47	98,500.00	None
152 B, C, D, F	4,375 Kva Generator, Switchgear, etc.	General Electric Co.	4	2/13/47	115,069.00	None
152 E	Oakdale Substation	Southern States Equipment Corp.	4	3/10/47	8,154.95	None
152 G	84" Penstock Valve	Chapman Valve Mfg. Company	2	2/10/47	31,850.00	None

\* The above contracts were all awarded to the lowest bidder except No. 133 for which the low bidder did not fully meet the requirements of the specifications.



## FINANCIAL STATEMENT OF THE METROPOLITAN DISTRICT WATER SUPPLY COMMISSION

EXPENDITURES AND DISBURSEMENTS FOR THE FISCAL YEAR, AND FROM JULY  
28, 1926, THE DATE OF THE APPOINTMENT OF THE COMMISSION ON  
ACCOUNT OF METROPOLITAN WATER SUPPLY  
CONSTRUCTION FUND

### GENERAL OVERHEAD

ADMINISTRATION, <i>Commissioners' Office</i> :	Year Ending June 30, 1947	Total to June 30, 1947
Total Except the Following Listed Items . . . . .	\$0.00	\$16,092.84
Salaries, Commissioners . . . . .	5,000.00	208,961.54
Salaries, Clerical . . . . .	20,380.04	295,545.94
Rent and Upkeep . . . . .	2,314.16	48,169.81
Labor . . . . .	761.60	761.60
Automobile Maintenance . . . . .	403.12	6,751.13
Miscellaneous Expenses (undistributed) . . . . .	247.78	29,696.63
Printing and Blueprinting . . . . .	623.41	15,632.11
Stationery and Office Supplies . . . . .	135.63	5,658.75
Advertising . . . . .	305.99	15,543.41
Postage . . . . .	120.00	3,792.13
Total Administration, Commissioners' Office . . . . .	\$30,291.73	\$646,605.89
ENGINEERING, <i>Headquarters Office</i> :		
Total Except the Following Listed Items . . . . .	\$0.00	\$211,932.57
Salaries, Engineering . . . . .	32,795.17	1,312,770.26
Salaries, Clerical . . . . .	9,778.62	263,481.34
Salaries, Engineering, Pension . . . . .	1,470.00	9,432.50
Engineering Instruments . . . . .	42.00	42.00
Rent and Upkeep . . . . .	6,087.85	195,188.37
Automobile Maintenance . . . . .	381.32	7,410.94
Miscellaneous Expense (undistributed) . . . . .	551.27	28,368.76
Printing and Blueprinting . . . . .	1,008.34	21,425.45
Stationery . . . . .	70.97	9,963.86
Postage . . . . .	368.40	5,261.98
Total Engineering, Headquarters Office . . . . .	\$52,553.94	\$2,065,277.51
TOTAL GENERAL OVERHEAD . . . . .	\$82,845.67	\$2,711,883.40

### DISTRIBUTION OF GENERAL OVERHEAD

ADMINISTRATION, <i>Commissioners' Office</i> :		
Ware Supply, including Wachusett-Coldbrook Tunnel Section of Quabbin Aqueduct (except PWA) . . . . .	\$4,599.50	\$135,055.27
Ware Supply, including Wachusett-Coldbrook Tunnel Section (PWA) . . . . .	\$0.00	\$129.21
Coldbrook-Swift Tunnel Section of Quabbin Aqueduct (except PWA) . . . . .	0.00	31,536.46
Coldbrook-Swift Tunnel Section of Quabbin Aqueduct (PWA) . . . . .	0.00	173.20
Quabbin Reservoir (PWA) . . . . .	0.00	1,589.11
Quabbin Reservoir (except PWA) . . . . .	5,936.87	299,978.76
Winsor Dam (except PWA) . . . . .	2,712.93	82,387.11
Winsor Dam (PWA) . . . . .	0.00	193.84
Quabbin Dike . . . . .	0.00	30,357.31
Special Investigations . . . . .	0.00	4,298.45
Southern Sudbury Emergency Supply . . . . .	0.00	8,690.28
Wachusett Watershed Protection and Elimination of Pollution (except PWA) . . . . .	15.15	16,063.87
Weston Aqueduct Siphons (PWA) . . . . .	0.00	423.11
Hultman Aqueduct (Supply Section) (PWA) . . . . .	0.00	6,771.17
Hultman Aqueduct (Supply Section) (except PWA) . . . . .	573.42	6,270.10
Hultman Aqueduct (Distribution Section) (PWA) . . . . .	0.00	5,976.56
Hultman Aqueduct (Distribution Section) (except PWA) . . . . .	16,453.86	32,065.28
Spot Pond By-Pass (PWA) . . . . .	0.00	430.30
Enlargement of Fells Reservoir (PWA) . . . . .	0.00	170.04
Total Administration, Commissioners' Office . . . . .	\$30,291.73	\$662,559.43

ENGINEERING, Headquarters Office:	Year Ending June 30, 1947	Total to June 30, 1947
Ware Supply, including Wachusett-Coldbrook Tunnel Section of Quabbin Aqueduct (except PWA)	\$7,979.79	\$447,860.27
Ware Supply, including Wachusett-Coldbrook Tunnel Section (PWA)	0.00	1,622.20
Coldbrook-Swift Tunnel Section of Quabbin Aqueduct (except PWA)	0.00	118,186.93
Coldbrook-Swift Tunnel Section of Quabbin Aqueduct (PWA)	0.00	292.03
Quabbin Reservoir (PWA)	0.00	16,854.90
Quabbin Reservoir (except PWA)	10,300.05	979,914.86
Winsor Dam (except PWA)	4,706.73	241,177.42
Winsor Dam (PWA)	0.00	<b>6,333.58</b>
Quabbin Dike	0.00	111,584.71
Special Investigations	0.00	19,863.79
Southern Sudbury Emergency Supply	0.00	33,407.97
Wachusett Watershed Protection and Elimination of Pollution (except PWA)	26.27	43,805.02
Wachusett Watershed Protection (PWA)	0.00	450.95
Weston Aqueduct Siphons (PWA)	0.00	5,722.73
Hultman Aqueduct (Supply Section) (PWA)	0.00	114,472.88
Hultman Aqueduct (Supply Section) (except PWA)	994.85	17,134.63
Hultman Aqueduct (Distribution Section) (PWA)	0.00	72,793.01
Hultman Aqueduct (Distribution Section) (except PWA)	28,546.25	74,456.00
Spot Pond By-Pass (PWA)	0.00	13,611.66
Enlargement of Fells Reservoir (PWA)	0.00	6,898.94
Total Engineering, Headquarters Office	\$52,553.94	\$2,326,444.48

## WARE SUPPLY (EXCEPT PWA)

## GENERAL OVERHEAD:

Administration, Commissioners' Office	\$4,599.50	\$135,055.27
Engineering, Headquarters Office	7,979.79	447,860.27
Total General Overhead	\$12,579.29	\$582,915.54

## ENGINEERING:

Total Except the Following Listed Items	\$0.00	\$30,326.09
Salaries, Engineering and Clerical	2,708.20	436,861.80
Consultant Expense	412.51	11,872.46
Labor	18.25	9,875.16
Miscellaneous Expense (undistributed)	1.25	11,673.32
Printing and Blueprinting	1.05	1,340.81
Stationery and Office Supplies	4.18	3,337.05
Postage	0.00	526.61
Automobile Purchase	2,000.00	13,690.29
Automobile Maintenance	41.25	19,877.29
Rent and Upkeep	120.00	24,126.34
Total Engineering	\$5,806.69	\$563,507.22

## REAL ESTATE—GENERAL CONSTRUCTION:

Total Except Special Agents	\$0.00	\$155,484.33
Special Agents—Salaries, Engineering	57.00	17,658.49
Total Real Estate	\$57.00	\$173,142.82

## WARE WATERSHED:

Total Except the Following Listed Items	\$0.00	\$294,599.98
Salaries, Engineering and Clerical	13,066.38	214,561.72
Legal and Expert Expense	150.45	43,048.86
Labor	3,180.84	93,025.08
Automobile Purchase	3,290.67	8,178.65
Automobile Maintenance	548.54	15,959.02
Compensation Payments to Employees Injured on Work	605.71	1,416.56
Miscellaneous Expense (undistributed)	2.59	8,769.53
Printing and Blueprinting	27.93	1,207.08
Stationery and Office Supplies	4.18	972.69
Postage	6.00	215.82
Labor on Automobiles and Mechanical Equipment	299.38	299.38
Maintenance of Mechanical Equipment	79.65	721.25
Rent and Upkeep	437.05	1,858.70
Purchases and Settlements (including Certificate of Judgment)	7,550.00	1,706,458.28
Taxes	16,401.90	170,066.80
Fire Stops and Fire Access Roads, Labor	1,487.20	39,543.30
Other Forestry Work and Hurricane Clearing, Labor	505.75	13,403.93
Total Ware Watershed	\$47,644.22	\$2,614,306.63



	Year Ending June 30, 1947	Total to June 30, 1947
WARE DIVERSION DAMAGES: . . . . .	\$0.00	\$1,429,557.92
PERMANENT CONSTRUCTION: . . . . .	0.00	9,842,117.40
Total Ware Supply, including Wachusett-Coldbrook Section of Quabbin Aqueduct (Except PWA) . . . . .	\$65,587.20	\$15,205,547.53
WACHUSETT-COLDBROOK TUNNEL SECTION OF QUABBIN AQUE- DUCT (PWA ONLY). . . . .	\$0.00	\$107,531.91
TOTAL WARE SUPPLY, INCLUDING WACHUSETT-COLDBROOK TUNNEL SECTION OF QUABBIN AQUEDUCT . . . . .	\$65,587.20	\$15,313,079.44
COLDbrook-SWIFT TUNNEL SECTION OF QUABBIN AQUEDUCT		
Total Expenditure . . . . .	\$0.00	\$5,422,684.86
QUABBIN RESERVOIR (PWA ONLY)		
	0.00	\$2,086,051.39
QUABBIN RESERVOIR, NOT INCLUDING WINSOR DAM AND QUABBIN DIKE (EXCEPT PWA)		
GENERAL OVERHEAD:		
Administration, Commissioners' Office . . . . .	\$5,936.87	\$299,978.76
Engineering Headquarters Office . . . . .	10,300.05	979,914.86
Total General Overhead . . . . .	\$16,236.92	\$1,279,893.62
ENGINEERING:		
Total Except the Following Listed Items . . . . .	\$0.00	\$73,032.96
Salaries, Engineering and Clerical . . . . .	17,028.57	804,480.87
Consultant Expense . . . . .	1,237.49	14,794.63
Labor . . . . .	787.17	135,687.94
Tools and Equipment . . . . .	135.76	3,646.17
Rent and Upkeep . . . . .	56.90	45,770.57
Maintenance of Mechanical Equipment . . . . .	187.60	4,092.68
Automobile Purchase . . . . .	2,093.78	30,035.36
Automobile Maintenance . . . . .	1,493.13	64,128.47
Miscellaneous Expense (undistributed) . . . . .	179.26	24,908.02
Printing and Blueprinting . . . . .	44.20	4,191.51
Stationery and Office Supplies . . . . .	7.04	10,556.30
Postage . . . . .	37.00	2,995.39
Labor on Automobiles and Mechanical Equipment . . . . .	739.08	5,710.55
Total Engineering . . . . .	\$24,026.98	\$1,224,031.42
REAL ESTATE—EXCEPT AWARDS BY COURT DECREE:		
Total Except the Following Listed Items . . . . .	\$0.00	\$926,779.03
Legal and Expert Expense . . . . .	288.00	193,900.43
Labor . . . . .	607.24	33,313.01
Miscellaneous Expense (undistributed) . . . . .	1,052.91	13,023.37
Printing and Blueprinting . . . . .	4.96	1,840.58
Maintenance of Real Estate . . . . .	80.30	18,622.84
Purchases and Settlements . . . . .	1,700.00	7,323,678.77
Taxes . . . . .	18,205.92	609,491.45
Fire Protection—Equipment . . . . .	586.00	13,267.58
Sub Total Real Estate—Except Awards by Court Decree . . . . .	\$22,525.33	\$9,133,917.06
REAL ESTATE—AWARDS BY COURT DECREE—BOARD OF REFEREES . . . . .	\$0.00	\$317,875.42
REAL ESTATE—AWARDS BY COURT DECREE—JURY VERDICTS:		
Total Except Settlements made by Attorney General, etc. . . . .	0.00	103,521.03
Settlements made by Attorney General on Petition brought in Superior Court prior to Judgment . . . . .	2,000.00	83,771.69
Sub Total Real Estate, Jury Verdicts . . . . .	\$2,000.00	\$187,292.72
Total Real Estate . . . . .	\$24,525.33	\$9,639,085.20
QUABBIN RESERVOIR DAMAGES: . . . . .	\$0.00	\$82,779.78
SWIFT DIVERSION DAMAGES (INCLUDING BEAVER BROOK) EXCEPT AWARDS BY COURT DECREE AND PAYMENTS TO COUNTIES:		
Total Except the Following Listed Items . . . . .	\$0.00	\$1,352,553.16
Salaries, Engineering and Clerical . . . . .	4,337.06	144,869.57
Legal and Expert Expense . . . . .	15.00	6,027.53
Labor . . . . .	132.60	19,658.49
Sub Total Swift Diversion Damages—Except Awards by Court Decree . . . . .	\$4,484.66	\$1,523,108.75
SWIFT DIVERSION DAMAGES (INCLUDING BEAVER BROOK) AWARDS BY COURT DECREE—JURY VERDICTS:		
Total Except the Following Listed Items . . . . .	\$0.00	\$323,897.26
Legal Expense . . . . .	529.59	49,586.52
Printing and Blueprinting . . . . .	199.13	1,569.57
Sub Total Swift Diversion Damages—Awards by Court Decree—Jury Verdicts . . . . .	\$728.72	\$375,053.35

	Year Ending June 30, 1947	Total to June 30, 1947
SWIFT DIVERSION DAMAGES—PAYMENTS TO COUNTIES FOR REIM- BURSEMENT AND EXPENSES OF LITIGATION IN COUNTY COURTS:	\$0.00	\$4,307.05
Total Swift Diversion Damages (Including Beaver Brook)	\$5,213.38	\$1,902,469.15
QUABBIN RESERVOIR—LIQUIDATION OF TOWNS		
TOWN OBLIGATIONS:		
Town of Enfield . . . . .	\$954.55	\$34,385.94
Town of Greenwich . . . . .	45.16	14,116.34
Town of Prescott . . . . .	47.28	5,933.56
Town of Dana . . . . .	37.61	36,840.84
Sub Total Town Obligations . . . . .	\$1,084.60	\$91,276.68
QUABBIN RESERVOIR—LIQUIDATION OF TOWNS		
LIQUIDATING EXPENSES:		
Total Quabbin Reservoir—Liquidation of Towns . . . . .	\$682.28	\$20,841.13
	\$1,766.88	\$112,117.81
QUABBIN RESERVOIR CEMETERIES (EXCEPT PWA): . . . . .	\$0.00	\$265,762.32
PERMANENT CONSTRUCTION—CONSTRUCTION CONTRACTS: . . . . .	\$0.00	\$785,263.49
PERMANENT CONSTRUCTION—AWARDS BY COURT DECREE—ACTIONS FOR BREACH OF CONTRACT: . . . . .	\$0.00	\$22,316.54
OTHER PERMANENT CONSTRUCTION—EXCEPT CLEARING . . . . .	\$0.00	\$16,458.83
OTHER PERMANENT CONSTRUCTION—1936 CLEARING PROJECTS:		
Compensation Payments to Employees Injured on Work . . . . .	\$625.72	\$47,783.97
All Other Items . . . . .	0.00	1,794,652.10
Sub Total 1936 Clearing Project . . . . .	\$625.72	\$1,842,436.07
OTHER PERMANENT CONSTRUCTION—WPA CLEARING PROJECTS . . . . .	\$0.00	\$3,387.76
OTHER PERMANENT CONSTRUCTION—RESERVOIR CLEARING NOT IN- CLUDING CLEARING PROJECTS:		
Total Except the Following Listed Items . . . . .	\$0.00	\$1,537.39
Salaries, Engineering . . . . .	1,392.55	10,771.37
Labor . . . . .	30,386.06	286,066.88
Compensation Payments to Employees Injured on Work . . . . .	1,369.35	2,147.41
Tools and Equipment . . . . .	157.18	1,038.04
Medical and Surgical Services . . . . .	41.00	705.75
Automobile Maintenance . . . . .	224.28	502.94
Labor on Automobiles and Mechanical Equipment . . . . .	144.02	144.02
Sub Total Reservoir Clearing Not Including Clearing Projects . . . . .	\$33,714.44	\$302,913.80
Total Quabbin Reservoir Permanent Construction . . . . .	\$34,340.16	\$2,972,776.49
HIGHWAY AND PUBLIC UTILITY RELOCATION: . . . . .	\$0.00	\$1,389,807.47
QUABBIN RESERVOIR WATERSHED—REFORESTATION NURSERIES:		
Total Except Salaries . . . . .	\$0.00	\$126,918.75
Salaries, Engineering and Clerical . . . . .	85.00	9,181.58
Sub Total Reforestation—Nurseries . . . . .	\$85.00	\$136,100.33
QUABBIN RESERVOIR WATERSHED—REFORESTATION WATERSHED PLANTING:		
Total Except the Following Listed Items . . . . .	\$0.00	\$4,811.62
Salaries, Engineering and Clerical . . . . .	297.38	7,751.92
Labor . . . . .	158.40	102,337.81
Sub Total Reforestation—Watershed Planting . . . . .	\$455.78	\$114,901.35
QUABBIN RESERVOIR WATERSHED—REFORESTATION—FIRE STOPS AND FIRE ACCESS ROADS:		
Total Except the Following Listed Items . . . . .	\$0.00	\$9,088.82
Salaries, Engineering . . . . .	92.75	3,857.61
Labor . . . . .	35,359.00	99,095.26
Automobile Maintenance . . . . .	7.12	987.98
Maintenance of Mechanical Equipment . . . . .	4.21	4.21
Compensation Payments to Employees Injured on Work . . . . .	50.14	5,104.37
Medical and Surgical Services . . . . .	5.00	1,241.55
Tools and Equipment . . . . .	7.39	7.39
Sub Total Reforestation—Fire Stops and Fire Access Roads . . . . .	\$35,525.61	\$119,387.19
QUABBIN RESERVOIR WATERSHED—FENCING OF WATERSHED PROP- ERTY:		
Labor . . . . .	\$110.51	\$4,469.41
All Other Items . . . . .	0.00	2,176.28
Sub Total Fencing of Watershed Property . . . . .	\$110.51	\$6,645.69



	Year Ending June 30, 1947	Total to June 30, 1947
QUABBIN RESERVOIR WATERSHED—OTHER FORESTRY AND HURRICANE		
CLEARING:		
Total Except the Following Listed Items . . . . .	\$0.00	\$6,552.75
Salaries, Engineering . . . . .	7.73	2,776.76
Labor . . . . .	1,551.00	43,754.28
Sub Total Forestry . . . . .	\$1,558.73	\$53,083.79
QUABBIN RESERVOIR WATERSHED—PATROL EQUIPMENT:		
Purchase of Automobiles, Trucks, etc. . . . .	\$2,705.27	\$2,705.27
Maintenance of Boats . . . . .	157.94	3,819.97
All Other Items . . . . .	0.00	3,111.96
Sub Total Patrol Equipment . . . . .	\$2,863.21	\$9,637.20
Total Quabbin Reservoir Watershed . . . . .	40,598.84	439,755.55
Total Quabbin Reservoir, not Including Winsor Dam and Quabbin Dike (Except PWA) . . . . .	\$146,708.49	\$19,308,478.81
TOTAL QUABBIN RESERVOIR, NOT INCLUDING WINSOR DAM AND QUABBIN DIKE . . . . .	\$146,708.49	\$21,394,530.20
WINSOR DAM (EXCEPT PWA)		
GENERAL OVERHEAD:		
Administration, Commissioners' Office . . . . .	\$2,712.93	\$82,387.11
Engineering, Headquarters Office . . . . .	4,706.73	241,177.42
Total General Overhead . . . . .	\$7,419.66	\$323,564.53
ENGINEERING:		
Total Except the Following Listed Items . . . . .	\$0.00	\$93,591.42
Salaries, Engineering and Clerical . . . . .	3,090.51	391,425.62
Labor . . . . .	44.16	69,028.79
Medical and Surgical Services . . . . .	13.00	210.00
Miscellaneous Expense (undistributed) . . . . .	62.76	14,003.08
Printing and Blueprinting . . . . .	13.20	2,617.12
Total Engineering . . . . .	\$3,223.63	\$570,876.03
PERMANENT CONSTRUCTION—CONSTRUCTION CONTRACTS:		
Completed Contracts . . . . .	\$0.00	\$4,858,626.77
Contract 149, Group A, Hydraulic Turbine . . . . .	22,641.93	22,641.93
Contract 149, Group C, E. and F, Switchgear and Appurte- nances . . . . .	9,248.58	12,025.98
Contract 149, Group D, Transformers . . . . .	0.00	3,095.28
Contract 150, Installation of above and Construction of Power Line at and Near Winsor Dam . . . . .	24,171.21	28,928.61
Sub Total Construction Contracts . . . . .	\$56,061.72	\$4,925,318.57
PERMANENT CONSTRUCTION—EXCEPT CONSTRUCTION CONTRACTS:		
Total Except the Following Listed Items . . . . .	\$0.00	\$15,000.31
Miscellaneous Expense (undistributed) . . . . .	1.20	13,707.73
Installed Equipment . . . . .	335.00	46,339.21
Sub Total Except Construction Contracts . . . . .	\$336.20	\$75,047.25
PERMANENT CONSTRUCTION—AWARDS BY COURT DECREE—DEFENCE AGAINST ACTION FOR BREACH OF CONTRACT . . . . .		
Total Permanent Construction . . . . .	\$0.00	\$58,471.50
Total Winsor Dam (Except PWA) . . . . .	56,397.92	5,058,837.32
	67,041.21	5,953,277.88
WINSOR DAM (PWA ONLY)		
TOTAL WINSOR DAM . . . . .	\$0.00	\$61,261.84
	\$67,041.21	\$6,014,539.72
QUABBIN DIKE		
Total Expenditure . . . . .	\$0.00	\$2,905,610.65
SPECIAL INVESTIGATIONS		
Total Expenditure . . . . .	\$0.00	\$149,609.63
SOUTHERN SUDBURY EMERGENCY SUPPLY		
Total Expenditure . . . . .	\$0.00	\$638,533.83
WACHUSETT WATERSHED PROTECTION AND ELIMINATION OF POLLUTION (EXCEPT PWA)		
GENERAL OVERHEAD:		
Administration, Commissioners' Office . . . . .	\$15.15	\$16,063.87
Engineering, Headquarters Office . . . . .	26.27	43,805.02
Total General Overhead . . . . .	\$41.42	\$59,868.89

	Year Ending June 30, 1947	Total to June 30, 1947
ENGINEERING:		
Total Except Salaries . . . . .	\$0.00	\$18,231.17
Salaries, Engineering . . . . .	291.51	18,097.64
Total Engineering . . . . .	\$291.51	\$36,328.81
REAL ESTATE:		
Legal and Expert Expense . . . . .	\$77.74	\$388.34
Purchases and Settlements . . . . .	48,000.00	48,000.00
Taxes . . . . .	0.00	785.06
Payments under Certificates of Judgment . . . . .	0.00	18,234.91
Total Real Estate . . . . .	\$48,077.74	\$67,408.31
TOWN OF HOLDEN SEWER (WPA PROJECT): . . . . .	\$0.00	\$153,741.94
TOWN OF RUTLAND SEWER (WPA PROJECT): . . . . .	\$0.00	\$136,058.34
WEST BOYLSTON SEWER:		
Total Except Rent and Upkeep . . . . .	\$0.00	\$17,642.93
Rent and Upkeep . . . . .	40.00	84.65
Total West Boylston Sewer . . . . .	\$40.00	\$17,727.58
Total Wachusett Watershed Protection and Elimination of Pollution (Except PWA) . . . . .	\$48,450.67	\$471,133.87
WACHUSETT WATERSHED PROTECTION (PWA ONLY) . . . . .	\$0.00	\$450.95
TOTAL WACHUSETT WATERSHED PROTECTION . . . . .	\$48,450.67	\$471,584.82
WESTON AQUEDUCT SIPHONS (PWA)		
Total Expenditure . . . . .	\$0.00	\$336,169.80
HULTMAN AQUEDUCT SUPPLY SECTION (PWA)		
Total Except Real Estate . . . . .	\$0.00	\$9,859,049.18
REAL ESTATE:		
Total Except Taxes . . . . .	\$0.00	\$224,472.29
Taxes . . . . .	2,517.19	17,004.71
Total Real Estate . . . . .	\$2,517.19	\$241,477.00
Total Hultman Aqueduct, Supply Section (PWA) . . . . .	\$2,517.19	\$10,100,526.18
HULTMAN AQUEDUCT SUPPLY SECTION (EXCEPT PWA)		
GENERAL OVERHEAD:		
Administration, Commissioners' Office . . . . .	\$573.42	\$6,270.10
Engineering, Headquarters Office . . . . .	994.85	17,134.63
Total General Overhead . . . . .	\$1,568.27	\$23,404.73
ENGINEERING:		
Total Except the Following Listed Items . . . . .	\$—39.35	\$1,147.28
Salaries, Engineering and Clerical . . . . .	6,710.16	53,346.34
Labor . . . . .	1,557.20	2,403.52
Miscellaneous Expense (undistributed) . . . . .	3.74	24.94
Printing and Blueprinting . . . . .	12.46	62.34
Stationery and Office Supplies . . . . .	66.68	76.16
Automobile Purchase . . . . .	1,530.00	1,530.00
Automobile Maintenance . . . . .	130.06	291.75
Medical and Surgical Services . . . . .	17.00	26.00
Total Engineering . . . . .	\$9,987.95	\$58,908.33
PERMANENT CONSTRUCTION: . . . . .	\$0.00	\$3,108.61
REAL ESTATE: Legal and Expert Expense . . . . .	\$93.83	\$93.83
Total Hultman Aqueduct, Supply Section (Except PWA) . . . . .	\$11,650.05	\$85,515.50
TOTAL HULTMAN AQUEDUCT, SUPPLY SECTION . . . . .	\$14,167.24	\$10,186,041.68
HULTMAN AQUEDUCT, DISTRIBUTION SECTION (PWA)		
Total Except Real Estate . . . . .	\$0.00	\$2,768,410.82
REAL ESTATE:		
Total Except Taxes . . . . .	\$0.00	\$62,445.54
Taxes . . . . .	1,346.20	8,234.75
Total Real Estate . . . . .	\$1,346.20	\$70,680.29
Total Hultman Aqueduct Distribution Section (PWA) . . . . .	\$1,346.20	\$2,839,091.11



## HULTMAN AQUEDUCT, DISTRIBUTION SECTION (EXCEPT PWA)

	Year Ending June 30, 1947	Total to June 30, 1947
GENERAL OVERHEAD:		
Administration, Commissioners' Office . . . . .	\$16,453.86	\$32,065.28
Engineering, Headquarters Office . . . . .	28,546.25	74,456.00
Total General Overhead . . . . .	\$45,000.11	\$106,521.28
ENGINEERING:		
Total Except the Following Listed Items . . . . .	\$0.00	\$36,888.95
Salaries, Engineering and Clerical . . . . .	47,536.04	196,094.02
Consultant Expense . . . . .	311.72	1,335.05
Legal Expense . . . . .	—2,587.72	2,679.39
Labor . . . . .	4,583.20	7,646.00
Furniture and Fixtures . . . . .	86.90	182.29
Engineering Instruments . . . . .	944.39	972.72
Tools and Equipment . . . . .	497.63	646.16
Rent and Upkeep . . . . .	843.30	1,925.61
Automobile Purchase . . . . .	913.40	913.40
Automobile Maintenance . . . . .	1,290.53	3,567.47
Miscellaneous Expense (undistributed) . . . . .	895.43	2,048.76
Printing and Blueprinting . . . . .	162.53	575.09
Stationery and Office Supplies . . . . .	340.55	841.72
Postage . . . . .	70.00	189.44
Laboratory Supplies . . . . .	10.66	123.63
Medical and Surgical Services . . . . .	1.00	20.50
Medical and Surgical Supplies . . . . .	250.87	304.56
Total Engineering . . . . .	\$56,150.43	\$251,687.65
REAL ESTATE:		
Legal Expense . . . . .	\$3,957.55	\$3,957.55
Printing and Blueprinting . . . . .	33.28	33.28
Total Real Estate . . . . .	\$3,990.83	\$3,990.83
PERMANENT CONSTRUCTION—CONSTRUCTION CONTRACTS		
Completed Contracts . . . . .	\$0.00	\$606.90
Contract No. 117, Shafts 6 and 7 of City Tunnel Section of Hultman Aqueduct . . . . .	300,020.08	300,020.08
Sub Total Construction Contracts . . . . .	\$300,020.08	\$300,626.98
PERMANENT CONSTRUCTION—EXCEPT CONSTRUCTION CONTRACTS:		
Total Except Miscellaneous Expense . . . . .	\$0.00	\$3,294.83
Miscellaneous Expense . . . . .	94.37	94.37
Sub Total Except Construction Contracts . . . . .	\$94.37	\$3,389.20
Total Permanent Construction . . . . .	\$300,114.45	\$304,016.18
Total Hultman Aqueduct, Distribution Section (Except PWA) . . . . .	\$405,255.82	\$666,215.94
TOTAL HULTMAN AQUEDUCT, DISTRIBUTION SECTION: . . . . .	\$406,602.02	\$3,505,307.05
SPOT POND BY-PASS AND IMPROVEMENTS TO PUMPING STATION (PWA)		
Total Expenditure . . . . .	\$0.00	\$218,798.74
ENLARGING FELS HIGH LEVEL DISTRIBUTING RESERVOIR (PWA)		
Total Expenditure . . . . .	\$0.00	\$175,444.61
DEFERRED CHARGES TO MAINTENANCE—1946 DEFICIENCY		
	\$0.00	\$5,340.67

## SUMMARY

## WATER SUPPLY CONSTRUCTION FUND

Total authorized under Chapter 111 and 375, Acts of 1926, Chapter 321, Acts of 1927 and Chapter 515, Acts of 1946 . . . . .	\$75,900,000.00	
Amount reverted from authorization under said Chapter 111 . . . . .	261,466.17	\$75,638,533.83
Received from City of Worcester under said Chapter 375 . . . . .	\$1,000,000.00	
Income Credited to Construction Fund . . . . .	1,098,952.78	
Serial Bonds issued and matured . . . . .	22,365,000.00*	
Serial Bonds outstanding June 30, 1947 . . . . .	36,385,000.00	
Balance of Authorization available for issue . . . . .	14,789,581.05	
	\$75,638,533.83	
Contributions by Federal Government from PWA Funds . . . . .	\$0.00	\$7,073,003.78
Total Construction Fund . . . . .		\$82,711,537.61
*Not Including Maturities of July 1, 1947 amounting to \$1,097,000.00.		

EXPENDITURES		Year Ending June 30, 1947	Total to June 30, 1947
SOUTHERN SUDBURY EMERGENCY SUPPLY . . . . .		\$0.00	\$638,533.83
WARE AND SWIFT SUPPLY (INCLUDING PORTION UNDER PWA):			
Ware Supply, including Wachusett-Coldbrook Tunnel Section of Quabbin Aqueduct . . . . .		\$65,587.20	\$15,313,079.44
Coldbrook-Swift Tunnel Section of Quabbin Aqueduct . . . . .		0.00	5,422,684.86
Quabbin Reservoir . . . . .		146,708.49	21,394,530.20
Winsor Dam . . . . .		67,041.21	6,014,539.72
Quabbin Dike . . . . .		0.00	2,905,610.65
SPECIAL INVESTIGATIONS . . . . .		\$0.00	\$149,609.63
WACHUSETT WATERSHED PROTECTION AND ELIMINATION OF POL- LUTION (INCLUDING BOTH PWA AND WPA PROJECTS) . . . . .		\$48,450.67	\$471,584.82
HULTMAN AQUEDUCT AND OTHER WORKS (INCLUDING PORTION UNDER PWA):			
Weston Aqueduct Siphons . . . . .		\$0.00	\$336,169.80
Hultman Aqueduct, Supply Section . . . . .		14,167.24	10,186,041.68
Hultman Aqueduct, Distribution Section . . . . .		406,602.02	3,505,807.05
Spot Pond By-Pass and Improvements to Pumping Station . . . . .		0.00	218,798.74
Enlarging Fells High-Level Distributing Reservoir . . . . .		0.00	175,444.61
DEFERRED CHARGES TO MAINTENANCE—1946 DEFICIENCY . . . . .		0.00	5,340.67
Total Expenditures . . . . .		\$748,556.83	\$66,737,275.70

## RECEIPTS

Receipts from Sales . . . . .	\$2,893.20	\$496,444.40
Receipts from Rents . . . . .	3,256.77	475,746.97
All Other Receipts . . . . .	110.30	154,420.32
Total Receipts, Construction Fund . . . . .	\$6,260.27	\$1,126,611.69

## DISTRIBUTION OF RECEIPTS

Credited to Annual Water Assessments as Follows:			
To 1928 Assessment, Rents and Sales . . . . .	\$3,033.03		
To 1929 Assessment, Rents and Sales . . . . .	24,343.77		
To Assessments 1927 to Date, Interest . . . . .	282.11	\$0.00	\$27,658.91
Credited to Construction Fund . . . . .	6,260.27		1,098,952.78
Total Receipts, Construction Accounts . . . . .	\$6,260.27		\$1,126,611.69

EXPENDITURES AND DISBURSEMENTS FOR THE FISCAL YEAR BY THE METRO-  
POLITAN DISTRICT WATER SUPPLY COMMISSION FROM MAINTENANCE FUNDS

## GENERAL OVERHEAD:

Administration, Commissioner's Office—Clerical Salaries . . . . .	\$5,464.95
Engineering, Headquarters Office—Clerical Salaries . . . . .	793.34
Total General Overhead . . . . .	\$6,258.29

## WARE SUPPLY AND QUABBIN AQUEDUCT

## MAINTENANCE AND OPERATION OF WATER SUPPLY WORKS:

Salaries, Engineering and Clerical . . . . .	\$7,506.03
Labor . . . . .	12,941.38
Supplies . . . . .	386.24
Automobile Maintenance . . . . .	1,024.19
Installed Equipment . . . . .	30.52
Engineering Instruments . . . . .	5.94
Tools and Other Mechanical Equipment . . . . .	157.99
Rent and Upkeep . . . . .	1,903.96
Miscellaneous Expense (undistributed) . . . . .	72.22
Printing and Blueprinting . . . . .	17.64
Stationery and Office Supplies . . . . .	57.58
Postage . . . . .	13.70
Medical and Surgical Supplies . . . . .	10.00
Medical and Surgical Services . . . . .	12.50

Sub Total Maintenance and Operation of Water Supply Works . . . . . \$24,139.89



		Year Ending June 30, 1947	Total to June 30, 1947
MAINTENANCE OF WATERSHED:			
Salaries, Engineering and Clerical	.	.	\$5,911.24
Labor	.	.	16,370.71
Automobile Maintenance	.	.	1,311.68
Tools and Other Mechanical Equipment	.	.	140.13
Rent and Upkeep	.	.	15.50
Miscellaneous Expense (undistributed)	.	.	11.00
Printing and Blueprinting	.	.	10.60
Stationery and Office Supplies	.	.	26.36
Postage	.	.	13.60
Medical and Surgical Services	.	.	43.25
Medical and Surgical Supplies	.	.	18.43
Sub Total Maintenance of Watershed	.	.	\$23,872.50
GUARDING AND FIRE PROTECTION:			
Police Protection—Labor	.	.	\$198.00
Fire Protection—Labor	.	.	22.10
Automobile Maintenance	.	.	2.47
Supplies	.	.	107.10
Sub Total Guarding and Fire Protection	.	.	\$329.67
MAINTENANCE AND OPERATION OF RUTLAND-HOLDEN SEWER:			
Salaries, Engineering	.	.	\$56.43
Labor	.	.	1,052.68
Use of City of Worcester Sewerage System	.	.	962.05
Sub Total Maintenance of Rutland-Holden Sewer	.	.	\$2,071.16
Total Ware Supply and Quabbin Aqueduct	.	.	\$50,413.22

## QUABBIN RESERVOIR

MAINTENANCE AND OPERATION OF WATER SUPPLY WORKS:			
Salaries, Engineering and Clerical	.	.	\$20,647.87
Labor	.	.	22,939.27
Supplies	.	.	1,376.54
Automobile Maintenance	.	.	1,748.27
Installed Equipment	.	.	343.16
Tools and Other Mechanical Equipment	.	.	382.79
Rent and Upkeep	.	.	6,332.09
Miscellaneous Expense (undistributed)	.	.	273.51
Printing and Blueprinting	.	.	18.80
Stationery and Office Supplies	.	.	120.59
Postage	.	.	22.70
Medical and Surgical Services	.	.	8.00
Medical and Surgical Supplies	.	.	8.28
Sub Total Maintenance and Operation of Water Supply Works	.	.	\$54,221.87
MAINTENANCE OF RESERVOIR AND WATERSHED:			
Salaries, Engineering and Clerical	.	.	\$4,488.66
Labor	.	.	22,667.67
Supplies	.	.	66.33
Automobile Maintenance	.	.	2,191.49
Boats and Other Floating Equipment	.	.	153.97
Tools and Other Mechanical Equipment	.	.	311.47
Miscellaneous Expense (undistributed)	.	.	317.13
Printing and Blueprinting	.	.	5.63
Stationery and Office Supplies	.	.	24.97
Postage	.	.	12.50
Medical and Surgical Services	.	.	20.00
Medical and Surgical Supplies	.	.	21.27
Sub Total Maintenance of Reservoir and Watershed	.	.	\$30,281.09
GUARDING AND FIRE PROTECTION:			
Police Protection:			
Labor	.	.	\$299.21
Automobile Maintenance	.	.	-460.72
Fire Protection:			
Salaries, Engineering and Clerical	.	.	71.45
Labor	.	.	520.23
Fire Equipment	.	.	372.16
Automobile Maintenance	.	.	12.03
Rent and Upkeep	.	.	28.30
Miscellaneous Expense (undistributed)	.	.	42.94
Sub Total Guarding and Fire Protection	.	.	\$885.60

MAINTENANCE AND OPERATION OF QUABBIN PARK CEMETERY:		Year Ending June 30, 1947	Total to June 30, 1947
Salaries, Engineering and Clerical . . . . .			\$3,093.34
Labor . . . . .			11,363.58
Supplies . . . . .			509.34
Automobile Maintenance . . . . .			99.10
Tools and Other Mechanical Equipment . . . . .			468.15
Rent and Upkeep . . . . .			62.23
Sub Total Maintenance of Quabbin Park Cemetery . . . . .			\$15,595.74
Total Maintenance—Quabbin Reservoir . . . . .			\$100,984.30

## HULTMAN AQUEDUCT—SUPPLY SECTION

Salaries, Engineering and Clerical . . . . .	\$9,922.56
Labor . . . . .	9,771.60
Supplies . . . . .	43.29
Automobile Maintenance . . . . .	568.88
Tools and Other Mechanical Equipment . . . . .	165.16
Miscellaneous Expense (undistributed) . . . . .	8.45
Printing and Blueprinting . . . . .	11.00
Stationery and Office Supplies . . . . .	9.41
Rent and Upkeep . . . . .	330.63
Medical and Surgical Supplies . . . . .	3.68
Total Maintenance of Hultman Aqueduct, Supply Section . . . . .	\$20,834.66

## HULTMAN AQUEDUCT—DISTRIBUTION SECTION

Salaries, Engineering and Clerical . . . . .	\$13,497.54
Labor . . . . .	27,695.35
Supplies . . . . .	382.69
Automobile Maintenance . . . . .	1,007.18
Tools and Other Mechanical Equipment . . . . .	424.67
Installed Equipment . . . . .	58.36
Engineering Instruments . . . . .	15.49
Rent and Upkeep . . . . .	2,409.07
Miscellaneous Expense (undistributed) . . . . .	297.87
Stationery and Office Supplies . . . . .	69.25
Postage . . . . .	6.00
Medical and Surgical Services . . . . .	62.50
Total Maintenance of Hultman Aqueduct, Distribution Section . . . . .	\$45,925.97

## SUMMARY

## WATER SUPPLY MAINTENANCE FUNDS

## EXPENDITURES

GENERAL OVERHEAD . . . . .	\$6,258.29
WARE SUPPLY AND QUABBIN AQUEDUCT . . . . .	50,413.22
QUABBIN RESERVOIR . . . . .	100,984.30
HULTMAN AQUEDUCT, SUPPLY SECTION . . . . .	20,834.66
HULTMAN AQUEDUCT, DISTRIBUTION SECTION . . . . .	45,925.97
1946 Liabilities . . . . .	327.09
1947 Liabilities . . . . .	934.59
Total Expenditures . . . . .	\$225,678.12

## RECEIPTS

Receipts from Rents . . . . .	\$1,630.00
Quabbin Park Cemetery:	
Receipts from Sale of Lots . . . . .	70.00
Interment and Foundation Fees, etc. . . . .	372.20
Miscellaneous (reimbursements for Sewage Disposal) . . . . .	1,193.65
Total Cash Receipts . . . . .	\$3,265.85



FINANCIAL STATEMENT OF THE METROPOLITAN DISTRICT  
WATER SUPPLY COMMISSION  
AS ENLARGED BY CHAPTER 705 OF THE ACTS OF 1945  
EXPENDITURES AND DISBURSEMENTS FOR THE FISCAL YEAR AND TOTAL TO  
DATE ON ACCOUNT OF METROPOLITAN SEWAGE DISPOSAL

SEWAGE DISPOSAL FUND

Total Appropriated under Chapter 512, Acts of 1939, Chapter 720, Acts of 1941, Chapter 705, Acts of 1945, and Chapter 446, Acts of 1946, from Total of \$15,000,000.00 authorized . . . . .		\$6,289,907.23
Serial Bonds issued and matured . . . . .	\$119,000.00	
Serial Bonds outstanding June 30, 1947 . . . . .	1,481,000.00	
Balance of Appropriation available for Issue . . . . .	4,506,167.96	
	<u>\$6,106,167.96</u>	

EXPENDITURES BY METROPOLITAN DISTRICT COMMISSION (1940-1941)

Contract for Borings . . . . .	\$36,291.61	
Preliminary Report of Consulting Engineers . . . . .	147,303.81	
Miscellaneous . . . . .	143.85	183,739.27
	<u></u>	<u></u>
Net Sewage Disposal Fund Available . . . . .		\$6,106,157.96

EXPENDITURES

NUT ISLAND SEWAGE TREATMENT PLANT

GENERAL OVERHEAD:	Year Ending June 30, 1947	Total to June 30, 1947
Administration, Commissioners' Office . . . . .	\$21,294.67	\$36,203.73
Engineering, Headquarters Office . . . . .	132,651.26	350,933.53
Total General Overhead . . . . .	<u>\$153,945.93</u>	<u>\$387,137.26</u>

ENGINEERING (FIELD):

Salaries, Engineering and Clerical . . . . .	\$83,640.15	\$194,305.24
Consultant Expense . . . . .	276.43	698.39
Legal Expense . . . . .	0.00	1,355.40
Labor . . . . .	7,404.20	14,835.25
Engineering Instruments . . . . .	277.28	716.41
Tools and Equipment . . . . .	27.39	155.07
Laboratory Equipment . . . . .	490.58	1,637.27
Furniture and Fixtures . . . . .	13.43	112.14
Rent and Upkeep . . . . .	1,170.58	1,734.73
Automobile Maintenance . . . . .	1,236.67	3,810.89
Maintenance of Mechanical Equipment . . . . .	45.01	115.84
Rental of Equipment . . . . .	0.00	150.00
Maintenance of Boats . . . . .	36.10	36.10
Installed Equipment . . . . .	4,173.34	4,173.34
Boats, Seaplanes, etc. . . . .	4.76	4.76
Diver—Sludge Disposal Line . . . . .	549.00	549.00
Miscellaneous Expense (undistributed) . . . . .	932.90	2,197.38
Printing and Blueprinting . . . . .	1,100.57	1,798.23
Stationery and Office Supplies . . . . .	382.48	679.45
Postage . . . . .	20.46	81.14
Laboratory Supplies . . . . .	238.40	653.95
Medical and Surgical Services . . . . .	59.50	283.32
Medical and Surgical Supplies . . . . .	24.65	67.11
Compensation to Labor for Injuries . . . . .	0.00	71.36
Total Engineering . . . . .	<u>\$102,103.88</u>	<u>\$230,221.77</u>

REAL ESTATE:

Legal Expense . . . . .	\$570.32	\$1,272.87
Purchase of Real Estate . . . . .	1,300.00	1,300.00
Total Real Estate . . . . .	<u>\$1,870.32</u>	<u>\$2,572.87</u>

PERMANENT CONSTRUCTION—CONSTRUCTION CONTRACTS:

Contract No. 136, Earthwork Excavation and Fill at and near Nut Island, Quincy . . . . .	\$132,784.16	\$408,865.24
Contract No. 137, Construction of Main Bldg., Substructure, Sedimentation Tanks, etc. . . . .	319,801.48	319,801.48
Contract No. 138, Soundings for Location of Sludge Disposal Line Nut Island, Quincy . . . . .	0.00	15,488.95
Contract No. 139, Constructing 12" Sludge Line . . . . .	165,452.96	165,452.96
Contract No. 144 A & B, Cranes and Hoists . . . . .	4,613.71	4,613.71
Contract No. 147, Resurfacing Sea and Island Avenues, Quincy . . . . .	16,456.67	16,456.67
Sub Total Construction Contracts . . . . .	<u>\$639,108.98</u>	<u>\$930,679.01</u>

PERMANENT CONSTRUCTION—EXCEPT CONSTRUCTION CONTRACTS:	Year Ending June 30, 1947	Total to June 30, 1947
Miscellaneous Expense (undistributed) . . . . .	\$477.54	\$477.54
Sub Total Except Construction Contracts . . . . .	\$477.54	\$477.54
Total Permanent Construction . . . . .	\$639,586.52	\$931,156.55
TOTAL NUT ISLAND SEWAGE TREATMENT PLANT . . . . .	\$897,506.65	\$1,551,088.45

## CHARLES RIVER BASIN, STORM OVERFLOW SEWER, SOUTH SIDE

GENERAL OVERHEAD:		
Engineering, Headquarters Office . . . . .	\$809.89	\$4,772.57
ENGINEERING (Field):		
Salaries, Engineering and Clerical . . . . .	\$144.09	\$1,681.32
Labor . . . . .	36.55	36.55
Miscellaneous Expense . . . . .	5.49	5.49
Total Engineering . . . . .	\$186.13	\$1,723.36
TOTAL CHARLES RIVER BASIN, STORM OVERFLOW SEWER, SOUTH SIDE . . . . .	\$996.02	\$6,495.93

## CHARLES RIVER BASIN, STORM OVERFLOW SEWER, NORTH SIDE

GENERAL OVERHEAD:		
Engineering, Headquarters Office . . . . .	\$66.51	\$2,217.42
ENGINEERING (Field):		
Salaries, Engineering and Clerical . . . . .	\$537.52	\$1,900.22
Installed Equipment . . . . .	39.75	39.75
Total Engineering . . . . .	\$577.27	\$1,939.97
TOTAL CHARLES RIVER BASIN, STORM OVERFLOW SEWER, NORTH SIDE . . . . .	\$643.78	\$4,157.39

## ALEWIFE BROOK STORM OVERFLOW SEWER

GENERAL OVERHEAD:		
Engineering, Headquarters Office . . . . .	\$9,596.08	\$11,189.40
ENGINEERING (Field):		
Salaries, Engineering and Clerical . . . . .	\$32,866.39	\$36,089.41
Labor . . . . .	5,052.40	5,263.00
Automobile Maintenance . . . . .	606.94	633.87
Medical and Surgical Services . . . . .	10.00	10.00
Miscellaneous Expense . . . . .	5.65	5.65
Total Engineering . . . . .	\$38,541.38	\$42,001.93
TOTAL ALEWIFE BROOK STORM OVERFLOW SEWER . . . . .	\$48,137.46	\$53,191.33

## NORTH METROPOLITAN RELIEF SEWER

GENERAL OVERHEAD:		
Engineering, Headquarters Office . . . . .	\$553.77	\$553.77

## DEER ISLAND SEWAGE TREATMENT

GENERAL OVERHEAD:		
Engineering, Headquarters Office . . . . .	\$308.15	\$308.15

## SUMMARY

NUT ISLAND SEWAGE TREATMENT PLANT . . . . .	\$897,506.65	\$1,551,088.45
CHARLES RIVER BASIN, STORM OVERFLOW SEWER, SOUTH SIDE . . . . .	\$996.02	\$6,495.93
CHARLES RIVER BASIN, STORM OVERFLOW SEWER, NORTH SIDE . . . . .	\$643.78	\$4,157.39
ALEWIFE BROOK STORM OVERFLOW SEWER . . . . .	\$48,137.46	\$53,191.33
NORTH METROPOLITAN RELIEF SEWER . . . . .	\$553.77	\$553.77
DEER ISLAND SEWAGE TREATMENT . . . . .	\$308.15	\$308.15
Total Expenditures . . . . .	\$948,145.83	\$1,615,795.02

The principal financial items of this report are in agreement with the Comptroller's Books.

Date: February 4, 1948

Checked by: JOSEPH A. PRENNEY.

RALPH E. HOUGHTON,  
Acting Comptroller.











## CANVASS OF BIDS FOR CONTRACTS 117A AND 117B OPENED OCT. 30, 1946

COMMONWEALTH OF MASSACHUSETTS  
METR. DISTR. WATER SUPPLY COMMISSION  
(AS ENLARGED)

## CONTRACTS 117A AND 117B

FOR THE CONSTRUCTION OF SHAFTS 6 AND 7 OF THE CITY TUNNEL  
IN THE CITIES OF NEWTON AND BOSTON MASSACHUSETTS.

①			②			③			④			⑤			⑥			⑦			⑧			⑨				
Marinucci Bros. & Co. 51 Ceylon St. Dorchester, Mass.			B. Perini & Sons, Inc. C.J. Maney Co., Inc. Rugo Const. Co., Inc. Frammingham, Mass.			Dravo Corp. 300 Penn. Ave. Pittsburgh, Pa.			Morrison - Knudson Co. Inc. 319 Broadway Boise, Idaho.			V. Barletta Co. 10 Whipple Ave. Roslindale, Mass. & Cabot Construction Corp. 395 Madison Ave. New York City N.Y.			Stiers Bros. Const. Co. 2944 Magazine St. St. Louis, Mo.			* C&R Construction Co. 75 Bradeen St. Roslindale, Mass.			Dravo Corp. 300 Penn. Ave. Pittsburgh, Pa.			Dravo Corp. 300 Penn. Ave. Pittsburg, Pa.				
ALTERNATE C			ALTERNATE C			ALTERNATE C			ALTERNATE C			ALTERNATE C			ALTERNATE C			ALTERNATE A			ALTERNATE A			ALTERNATE B				
QUAN.	PRICE	AMOUNT	QUAN.	PRICE	AMOUNT	QUAN.	PRICE	AMOUNT	QUAN.	PRICE	AMOUNT	QUAN.	PRICE	AMOUNT	QUAN.	PRICE	AMOUNT	QUAN.	PRICE	AMOUNT	QUAN.	PRICE	AMOUNT	QUAN.	PRICE	AMOUNT		
200	15.00	3,000	200	3.60	720	200	25.00	5,000	200	24.60	4,920	200	25.00	5,000	200	25.00	5,000	200	50.00	10,000	200	25.00	5,000					
50	20.00	1,000	50	3.60	180	50	5.00	250	50	16.80	840	50	25.00	1,250	50	25.00	1,250							50	5.00	250		
3,300	34.00	112,200	3,300	31.50	103,950	3,300	25.00	82,500	3,300	46.50	153,450	3,300	42.00	138,600	3,300	50.00	165,000	3,300	33.50	110,550	3,300	25.00	82,500					
4,700	30.00	141,000	4,700	29.00	136,300	4,700	22.00	103,400	4,700	39.40	185,180	4,700	44.00	206,800	4,700	48.00	225,600							4,700	22.00	103,400		
2,200	23.00	50,600	2,200	25.50	56,100	2,200	32.00	70,400	2,200	30.60	67,320	2,200	33.00	72,600	2,200	40.00	88,000	2,200	33.50	73,700	2,200	32.00	70,400					
3,400	23.00	78,200	3,400	25.50	86,700	3,400	28.00	95,200	3,400	28.10	95,540	3,400	36.00	122,400	3,400	39.00	132,600							3,400	28.00	95,200		
200	40.00	8,000	200	23.50	4,700	200	20.00	4,000	200	39.30	7,860	200	60.00	12,000	200	20.00	4,000	100	33.50	3,350	100	20.00	2,000	100	20.00	2,000		
1,650	2.00	3,300	1,650	1.50	2,475	1,650	35.00	57,750	1,650	3.92	6,468	1,650	15.00	24,750	1,650	20.00	33,000	700	5.00	3,500	700	35.00	24,500	950	35.00	33,250		
5,000	1.50	7,500	5,000	20	1,000	5,000	25	1,250	5,000	2.80	14,000	5,000	1.50	7,500	5,000	20	1,000	5,000	1.50	7,500	5,000	25	1,250					
10,000	1.50	15,000	10,000	20	2,000	10,000	25	2,500	10,000	2.80	28,000	10,000	1.50	15,000	10,000	1.00	10,000							10,000	25	2,500		
280	25.00	7,000	280	75.00	21,000	280	190.00	53,200	280	39.20	10,976	260	60.00	15,600	280	40.00	11,200	280	38.00	10,640	280	190.00	53,200					
230	30.00	6,900	230	120.00	27,600	230	205.00	47,150	230	72.80	16,744	230	60.00	13,800	230	50.00	11,500							230	205.00	47,150		
900	20.00	18,000	900	17.25	15,525	900	35.00	31,500	900	48.40	43,560	900	35.00	31,500	900	20.00	18,000	900	21.00	18,900	900	35.00	31,500					
1,000	20.00	20,000	1,000	17.25	17,250	1,000	35.00	35,000	1,000	48.10	48,100	1,000	40.00	40,000	1,000	20.00	20,000							1,000	35.00	35,000		
100	5.00	500	100	5.00	500	100	5.00	500	100	5.00	500	100	5.00	500	100	5.00	500	50	5.00	250	50	5.00	250	50	5.00	250		
3,800	3.10	11,780	3,800	3.20	12,160	3,800	3.50	13,300	3,800	3.64	13,832	3,800	4.00	15,200	3,800	5.00	19,000	1,800	4.00	7,200	1,800	3.50	6,300	2,000	3.50	7,000		
4,000	10	40,000	4,000	.08	320	4,000	.09	360	4,000	.134	536	4,000	25	1,000	4,000	10	400	2,000	25	500	2,000	.09	180	2,000	.09	180		
23,000	20	4,600	23,000	25	5,750	23,000	20	4,600	23,000	168	3,864	23,000	30	6,900	23,000	20	4,600	14,000	40	5,600	14,000	20	2,800	9,000	20	1,800		
10	250.00	2,500	10	300.00	3,000	10	285.00	2,850	10	224.00	2,240	10	500.00	5,000	10	300.00	3,000	4	400.00	1,600	4	285.00	1,140	6	285.00	1,710		
100	10.00	1,000	100	11.00	1,100	100	10.00	1,000	100	16.80	1,680	100	20.00	2,000	100	12.00	1,200	40	40.00	1,600	40	10.00	400	60	10.00	600		
200	2.00	400	200	1.20	240	200	1.00	200	200	1.40	280	200	3.00	600	200	1.50	300	100	2.00	200	100	1.00	100	100	1.00	100		
500	1.50	750	500	.90	450	500	2.00	1,000	500	1.68	840	500	6.00	3,000	500	2.50	1,250	250	3.00	750	250	2.00	500	250	2.00	500		
100	3.50	350	100	4.00	400	100	5.00	500	100	5.60	560	100	4.00	400	100	3.00	300	50	5.00	250	50	5.00	250	50	5.00	250		
140	20.00	2,800	140	23.50	3,290	140	50.00	7,000	140	39.20	5,488	140	25.00	3,500	140	50.00	7,000	60	100.00	6,000	60	50.00	3,000	80	50.00	4,000		
20	15.00	300	20	18.00	360	20	20.00	400	20	56.00	1,120	20	50.00	1,000	20	60.00	1,200	10	200.00	2,000	10	20.00	200	10	20.00	200		
5	200.00	1,000	5	300.00	1,500	5	270.00	1,350	5	168.00	840	5	400.00	2,000	5	250.00	1,250	2	400.00	800	2	270.00	540	3	270.00	810		
1,900	2.25	4,275	1,900	2.60	4,940	1,900	2.75	5,225	1,900	3.36	6,384	1,900	3.00	5,700	1,900	4.00	7,600	900	2.75	2,475	900	2.50	2,250	1,000	3.00	3,000		
5,000.00	5,000		17,500.00	17,500		6,000.00	6,000		3,920.00	3,920		6,000.00	6,000		5,000.00	5,000		5,000.00	5,000		6,000.00	6,000		6,000.00	6,000		6,000.00	6,000
5,000.00	5,000		20,000.00	20,000		6,000.00	6,000		3,920.00	3,920		6,000.00	6,000		5,000.00	5,000		5,000.00	5,000		2,000.00	2,000		2,500.00	2,500		2,500.00	2,500
5,000.00	5,000		3,200.00	3,200		4,500.00	4,500		5,600.00	5,600		5,000.00	5,000		15,000.00	15,000		5,000.00	5,000		2,000.00	2,000		2,500.00	2,500		2,500.00	2,500
		517,355.00			555,160.00			643,885.00			734,562.00			770,600.00			798,750.00			277,365.00			296,260.00			347,630.00		
	10.00	517.35		10.00	555.16		10.00	643.85		14.7804	10,857.12		10.00	770.60		15.00	11,981.25		15.00	4,160.47		10.00	2,962.60		10.00	3,476.50		
522,528.55			560,711.60			650,323.85			745,419.12			778,306.00			810,731.25			281,525.47			299,222.60			351,126.50				
B.B.	26,126.43		B.B.	28,035.58		C.C.	35,000.00		B.B.	37,500.00		B.B.	60,000.00		B.B.	40,536.56		B.B.	14,076.27		C.C.	(See alt. C)		C.C.	(See alt. C)			

Contract awarded Nov. 6, 1946  
Contract executed Nov. 25, 1946Tabulated by LEP  
Checked by ZRSAlternate A is for Shaft 6 only.  
Alternate B is for Shaft 7 only.  
Alternate C is for Shaft 6 and Shaft 7.

\*\* Should be 280

\* An informal bid on alternate B of cost plus 20%  
and on alternate C of cost plus 20% was also submitted.

FILE CONT. 117 3.33X

Acc. 50.576







# CANVASS OF BIDS FOR CONTRACT 139 — OPENED OCT. 16, 1946

COMMONWEALTH OF MASSACHUSETTS  
METR. DISTR. WATER SUPPLY COMMISSION  
AS ENLARGED

## CONTRACT 139

FOR CONSTRUCTING A 12-INCH SLUDGE DISPOSAL LINE FROM NUT ISLAND TO PRESIDENT ROADS IN THE TOWN OF HULL AND THE CITIES OF QUINCY AND BOSTON, AND OUTFALL DIFFUSERS IN THE TOWN OF HULL, MASSACHUSETTS.

★ ①  
Bay State  
Dredging and  
Contracting Co.  
62 Conder St.  
E. Boston, Mass.

②  
George M. Bryne  
294 Washington  
St. Boston,  
Mass.

③  
Merritt-Chapman  
& Scott Corp.  
292 Pequot Ave.  
New London,  
Conn.

④  
V. Barletta Co.  
10 Whipple Ave.  
Roslindale,  
Mass.

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	PRICE	AMOUNT	PRICE	AMOUNT	PRICE	AMOUNT	PRICE	AMOUNT
1	Earth excavation above El. 100.	Cu. Yd.	9,000	5.50	49,500	4.00	36,000	8.00	72,000	2.00	18,000
2	Earth excavation between El. 80+100.	Cu. Yd.	3,800	6.45	24,510	9.00	34,200	3.15	11,970	2.00	7,600
3	Earth excavation below El. 80.	Cu. Yd.	10,000	5.15	51,500	9.00	90,000	5.80	58,000	2.00	20,000
4	Rock excavation above El. 100.	Cu. Yd.	600	20.00	12,000	15.00	9,000	10.00	6,000	15.00	9,000
5	Rock excavation between El. 80+100.	Cu. Yd.	200	30.00	6,000	25.00	5,000	45.00	9,000	30.00	6,000
6	Rock excavation below El. 80.	Cu. Yd.	400	10.00	4,000	35.00	14,000	52.00	20,800	50.00	20,000
7	Refill and embankment above El. 100.	Cu. Yd.	3,000	.50	4,500	2.00	18,000	2.50	22,500	.75	1,750
8	Refill and embankment between El. 80+100.	Cu. Yd.	3,800	2.50	9,500	2.00	7,600	3.15	11,970	.75	2,850
9	Refill below El. 80.	Cu. Yd.	10,000	2.37	23,700	2.00	20,000	3.15	31,500	.75	7,500
10	Preparing trench bottom.	Lin. Ft.	21,000	1.00	21,000	1.00	21,000	1.72	36,120	1.00	21,000
11	Crushed stone and screened gravel.	Cu. Yd.	300	10.00	3,000	7.00	2,100	8.00	2,400	10.00	3,000
12	Riprap.	Cu. Yd.	450	8.00	3,600	15.00	6,750	12.00	5,400	10.00	4,500
13	Furnishing and laying cast iron pipe and fittings above El. 100.	Lin. Ft.	7,500	17.50	131,250	7.50	56,250	15.00	112,500	25.00	187,500
14	Furnishing and laying cast iron pipe and fittings below El. 100.	Lin. Ft.	13,800	8.80	121,440	19.00	262,200	17.00	234,600	45.00	621,000
15	Creosoted timber piles.	Lin. Ft.	2,500	3.00	7,500	3.00	7,500	4.00	10,000	7.00	17,500
16	Creosoted timber sills, caps and bracing	M.B.M.	10	696.00	6,960	300.00	3,000	1,100.00	11,000	600.00	6,000
17	Miscellaneous lumber.	M.B.M.	10	400.00	4,000	300.00	3,000	400.00	4,000	400.00	4,000
18	Reinforced concrete.	Cu. Yd.	140	80.00	11,200	100.00	14,000	80.00	11,200	60.00	8,400
19	Miscellaneous plain concrete.	Cu. Yd.	120	75.00	9,000	100.00	12,000	80.00	9,600	55.00	6,600
20	Reinforcing steel.	Pound	15,000	.20	3,000	.15	2,250	.13	1,950	.20	3,000
21	Portland cement.	Bbl.	400	6.00	2,400	6.00	2,400	4.00	1,600	5.00	2,000
22	Miscellaneous steel and iron.	Pound	2,500	1.00	2,500	1.00	2,500	.22	550	1.00	2,500
23	Furnishing and setting gate valves and air valves.	Lump S.			4,000		3,500		4,334		2,500
24	Construction of air valves and access chambers in addition to other items.	Lump S.			11,000		2,500		2,000		1,500
25	Caring for and relaying existing sewer, water and cable lines plus other items.	Lump S.			6,400		3,000		6,000		2,000
26	Furnishing and placing special outlet at President Roads.	Lump S.			7,000		19,000		3,720		6,000
27	Furnishing and placing outfall diffusers.	Lump S.			28,000		35,000		15,000		35,000
28	Cleaning up.	Lump S.			1,000		2,500		6,000		2,500
Sub-Totals (Items 1 to 28 incl.)					569,460		694,250		721,714		1,034,200
29	Furnishing Performance Bond.				6,264.06		6,942.50		10,825.71		10,342.00
Totals					575,724.06		701,192.50		732,539.71		1,044,542.00
Bid Security				BB INDICATES BID BOND CC INDICATES CERTIFIED CHECK		B.B. 30,000.00	B.B. 40,000.00	C.C. 50,000.00	B.B. 75,000.00		

★ Contract awarded Oct. 16, 1946 — Tabulated by JTD  
Contract executed Nov. 4, 1946 — Checked by KRS





## CANVASS OF BIDS FOR CONTRACT 146 - OPENED APRIL 29, 1947

COMMONWEALTH OF MASSACHUSETTS METR. DIST. WATER SUPPLY COMMISSION (AS ENLARGED) CONTRACT NO. 146 FOR THE CONSTRUCTION OF THE CONCRETE PORTION OF THE SLUDGE DIGESTION TANKS OF THE NUT ISLAND SEWAGE TREATMENT PLANT AT NUT ISLAND IN THE CITY OF QUINCY, MASSACHUSETTS			QUANTITIES		★ ① Farina Bros. 61 Bridge St. Newton, Mass.		② Farina Bros. 61 Bridge St. Newton, Mass.		③ Coleman Bros. Corp. 40 Central St. Boston, Mass.		④ Berke Moore Co. Inc. 8 Newbury St. Boston, Mass.		⑤ S. Volpe & Co. 150 Congress St. Boston, Mass.		⑥ Coleman Bros. Corp. 40 Central St. Boston, Mass.		⑦ J.A. Singarella Co. 15 Bay St. Boston, Mass.		⑧ John Bowen Co. 129 Newbury St. Boston, Mass.		⑨ Berke Moore Co. Inc. 8 Newbury St. Boston, Mass.		⑩ S. Volpe & Co. 150 Congress St. Boston, Mass.		⑪ J.A. Singarella Co. 15 Bay St. Boston, Mass.		⑫ V. Bartletta Co. 10 Whipple Ave. Roslindale, Mass.		⑬ John Bowen Co. 129 Newbury St. Boston, Mass.		⑭ W.N. Worthington Co. 159 Newport Ave. Quincy, Mass.		⑮ V. Bartletta Co. 10 Whipple Ave. Roslindale, Mass.		⑯ Marinucci Bros. Co. 51 Ceylon St. Dorchester, Mass.			
			ALTERNATIVE		ALTERNATIVE A		ALTERNATIVE B		ALTERNATIVE A		ALTERNATIVE B		ALTERNATIVE B		ALTERNATIVE B		ALTERNATIVE A		ALTERNATIVE A		ALTERNATIVE A		ALTERNATIVE A		ALTERNATIVE B		ALTERNATIVE A		ALTERNATIVE B		ALTERNATIVE A		ALTERNATIVE B		ALTERNATIVE A			
ITEM NO.	DESCRIPTION	UNIT	A	B	PRICE	AMOUNT	PRICE	AMOUNT	PRICE	AMOUNT	PRICE	AMOUNT	PRICE	AMOUNT	PRICE	AMOUNT	PRICE	AMOUNT	PRICE	AMOUNT	PRICE	AMOUNT	PRICE	AMOUNT	PRICE	AMOUNT	PRICE	AMOUNT	PRICE	AMOUNT	PRICE	AMOUNT	PRICE	AMOUNT	PRICE	AMOUNT		
1.	Excavation	Cu. Yd.	3,500	2,500	4.00	14,000	4.00	10,000	1.50	5,250	5.00	12,500	3.00	7,500	1.50	3,750	1.75	6,125	4.40	15,400	5.00	17,500	3.00	10,500	1.75	4,375	2.50	6,250	4.40	11,000	1.00	3,500	2.50	6,250	2.50	6,250		
2.	Refill and embankment	Cu. Yd.	3,500	2,500	2.00	7,000	2.00	5,000	1.00	3,500	1.00	2,500	3.00	7,500	1.00	2,500	1.25	4,375	2.00	7,000	1.00	3,500	3.00	10,500	1.25	3,125	1.00	3,500	2.00	5,000	2.50	6,250	1.00	2,500	3.00	10,500		
3.	Crushed stone and screened gravel	Cu. Yd.	200	200	5.00	1,000	5.00	1,000	5.00	1,000	4.00	800	5.00	1,000	5.00	1,000	3.00	600	5.00	1,000	4.00	800	5.00	1,000	3.00	600	4.00	800	5.00	1,000	3.00	600	4.00	800	6.00	1,200		
4.	Concrete in foundations and floors	Cu. Yd.	2,200	1,700	31.75	69,850	45.00	76,500	18.00	39,600	25.00	42,500	43.00	81,600	20.00	34,000	21.25	46,750	19.00	41,800	25.00	55,000	35.00	77,000	23.75	40,375	42.50	93,500	19.00	32,300	36.00	79,200	59.00	100,300	35.00	77,000		
5.	Concrete in sidewalks	Cu. Yd.	3,200	1,500	31.75	101,600	45.00	67,500	39.50	126,400	69.00	103,500	48.00	72,000	70.00	105,000	39.25	125,600	42.00	134,400	40.00	128,000	35.00	112,000	80.00	120,000	42.50	136,000	68.00	132,000	36.00	115,200	59.00	88,500	40.00	128,000		
6.	Concrete not included in Items 4 & 5	Cu. Yd.	600	600	31.75	19,050	45.00	27,000	70.00	42,000	60.00	36,000	50.00	30,000	70.00	42,000	85.00	51,000	38.00	22,800	60.00	36,000	50.00	30,000	85.00	51,000	42.50	25,500	38.00	22,800	36.00	21,600	59.00	35,400	40.00	24,000		
7.	Portland Cement	Barrel	10,000	6,500	3.30	33,000	3.30	21,450	3.30	33,000	3.50	22,750	3.25	21,125	3.30	21,450	3.20	32,000	3.20	32,000	3.50	35,000	3.25	32,500	3.20	20,800	3.00	30,000	3.20	20,800	3.10	31,000	3.00	19,500	4.15	41,500		
8.	Reinforcing steel	Pound	500,000	500,000	0.08	120,000	0.08	40,000	0.08	120,000	0.07	35,000	0.075	37,500	0.09	45,000	0.07	105,000	0.075	112,500	0.07	105,000	0.075	112,500	0.07	35,000	0.07	105,000	0.08	40,000	0.08	120,000	0.07	35,000	0.15	225,000		
9.	Prestressing and gunite work	Each Tank	4	4	300,000.00	1,200,000	300,000.00	1,200,000	275,000.00	1,100,000	287,480.00	1,149,920	320,000.00	1,280,000	275,000.00	1,100,000	287,480.00	1,149,920	320,000.00	1,280,000	275,000.00	1,100,000	287,480.00	1,149,920	320,000.00	1,280,000	275,000.00	1,100,000	287,480.00	1,149,920	320,000.00	1,280,000	275,000.00	1,100,000	287,480.00	1,149,920	320,000.00	1,280,000
10.	Rubbed finish	Sq. Ft.	16,000	16,000	0.125	2,000	0.125	2,000	0.20	3,200	0.15	2,400	0.15	2,400	0.15	2,400	0.15	2,400	0.15	2,400	0.25	4,000	0.20	3,200	0.15	2,400	0.15	2,400	0.15	2,400	0.15	2,400	0.15	2,400	1.00	16,000		
11.	Cast iron pipe specials	Pound	20,000	17,000	0.22	4,400	0.25	4,250	0.25	5,000	0.40	6,800	0.25	4,250	0.25	4,250	0.27	5,440	0.33	6,600	0.40	8,000	0.25	5,000	0.27	4,590	0.20	4,000	0.33	5,610	0.21	4,200	0.20	3,400	0.35	7,000		
12.	Miscellaneous iron and steel	Pound	50,000	50,000	0.20	10,000	0.27	13,500	0.35	17,500	0.45	22,500	0.34	17,000	0.35	17,500	0.37	18,500	0.63	31,500	0.45	22,500	0.37	18,500	0.45	22,500	0.45	22,500	0.63	31,500	0.38	19,000	0.45	22,500	0.40	20,000		
13.	Miscellaneous non-ferrous metals	Pound	2,000	2,000	0.225	450	1.30	2,600	1.50	3,000	1.50	3,000	1.50	3,000	1.50	3,000	1.50	3,000	1.43	2,860	1.50	3,000	1.50	3,000	1.75	3,500	1.43	2,860	1.25	2,500	1.75	3,500	1.25	2,500	1.25	2,500		
14.	Miscellaneous lumber	Mft.	10	10	150.00	1,500	150.00	1,500	300.00	3,000	200.00	2,000	500.00	5,000	300.00	3,000	600.00	6,000	380.00	3,800	200.00	2,000	500.00	5,000	600.00	6,000	200.00	2,000	380.00	3,800	300.00	3,000	200.00	2,000	400.00	4,000		
15.	Testing tanks	Each Tank	4	4	1,500.00	6,000	1,500.00	6,000	500.00	2,000	1,000.00	4,000	1,250.00	5,000	500.00	2,000	1,250.00	5,000	1,900.00	7,600	1,000.00	4,000	1,250.00	5,000	1,250.00	5,000	500.00	2,000	1,900.00	7,600	1,000.00	4,000	500.00	2,000	500.00	2,000		
16.	Cleaning up	Lump Sum	1,000.00	1,000.00	1,000.00	1,000	1,000.00	1,000	1,000.00	1,000	1,000.00	1,000	2,000.00	2,000	1,000.00	1,000	1,000.00	1,000	2,500.00	2,500	1,400.00	1,400	2,000.00	2,000	1,000.00	1,000	2,000.00	2,000	2,500.00	2,500	1,000.00	1,000	2,000.00	2,000	5,000.00	5,000		
Sub totals for Alternative A Items 1 to 8 and 10 to 16, inclusive						390,850				404,550							412,750		424,160		425,700		426,200				441,450				447,450				590,450			
Sub totals for Alternative B Items 1 to 9 and 11 to 16, inclusive								397,300				410,250		409,467		412,550										433,365			445,270				451,650					
17.	Furnishing performance bond				10.00	3,908.50	10.00	3,973	15.00	6,068.25	10.00	4,102.50	15.00	6,142	15.00	6,188.25	15.00	6,191.25	10.00	4,241.60	10.00	4,257	15.00	63,930.00	15.00	650,047	10.00	441,450	10.00	445,270	15.00	671,175	10.00	4,516.50	10.00	5,904.50		
Totals						394,758.50		401,273.75		410,618.25		414,352.50		415,609.00		418,738.25		418,941.25		428,401.60		429,957.00		432,593.00		439,865.47		445,864.50		449,722.70		454,161.75		456,166.50		596,354.50		
Bid Security						B.B. 25,000.00				B.B. 24,000.		B.B. 30,000		B.B. 25,000.				B.B. 22,500.								CC 25,000		B.B. 5%		B.B. 50,000				B.B. 5%				
B.B. indicates Bid Bond C.C. indicates Certified Check																																						

Notes:  
Alternative A is for conventional design.  
Alternative B is for prestressed design.

★ Contract awarded May 6, 1947  
Contract executed May 26, 1947

Tabulated by 220  
Checked by J.K.D.



